

NOTES FROM THE ROYAL BOTANIC GARDEN EDINBURGH

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STUDIES IN THE FLORA OF AFGHANISTAN: VII*

Labiatae: Lam.—end.

I. C. HEDGE and J. M. LAMOND

This paper continues the account of the Labiatae in the Afghanistan–W. Pakistan area. It follows the same pattern as the two previous accounts of Labiatae in Notes R.B.G. Edinb. 26: 407–425 (1966) and l.c. 27: 149–173 (1967).

As supplements to this account, there are three appendices: 1, including taxa not dealt with in the previous parts of the Labiatae which have come to light since they were published; 2, species of doubtful generic affinity and 3, a check-list of all currently known species.

In all, twenty-seven genera are considered, including three not previously recorded from this area—*Gontscharovia*, *Lophanthus* and *Stachyopsis*. Five new species are described: two each in *Nepeta* and *Scutellaria* and one in *Eremostachys*; new combinations are made in *Nepeta*, *Origanum*, *Stachyopsis* and *Teucrium*.

LAMIUM L., Sp. Plant. 579 (1753); Gen. Plant. ed 5: 252 (1754).

- | | |
|---|---------------------------------|
| 1. Annual; upper leaves amplexicaul | 1. <i>L. amplexicaule</i> L. |
| + Perennial; leaves not amplexicaul | 2 |
| 2. Ascending or erect perennial; indumentum absent or hispid; corolla white | 2. <i>L. album</i> L. |
| + Prostrate or ascending perennial; indumentum densely lanate; corolla purplish | 3. <i>L. rhomboideum</i> Benth. |

1. *L. amplexicaule* L., Sp. Plant. 579: 1753.

TYPE: "Hab. in Europae cultis" (LINN—photo!).

AFGHANISTAN. Kabul: Paghman, 2400 m, *Koelz* 12077; Behzud (Diwal Kol), 2800 m, *Rechinger* 18617. Parvan: Charikar, *Neubauer* 708. Nangarhar:

* The previous parts have been published in the following periodicals: I. Arbok Univers. Bergen, Math.-Naturv. ser. 1963, 18: 1–56 (1964). II. Nytt Mag. Bot. 12: 123–134 (1965). III. Notes R.B.G. Edinb. 26: 407–425 (1966). IV. Bot. Notiser 119 (1966). V. Acta Hort. Gotob. 28: 57–63 (1966). VI. Notes R.B.G. Edinb. 27: 149–173 (1967).

Jalalabad, *Gilli* 3610; Gusalak, *Edelberg* 233. Badakshan: Faizabad, *Furse* 6201. Herat: Murghab, 500 m, *Koeie* 3510.

W PAKISTAN. Kurram: Kurram valley, *Aitchison* 212. Peshawar: Peshawar, *Deane*. Quetta: Saria Rd., 1700 m, *Lamond* 901; Urak, *Lace* 3344. Chitral: *Stainton* 2160; Drosh, *Toppin* 84. Swat: prope Mingora, *Rechinger* 30670.

RANGE: throughout Eurasia.

2. *L. album* L., Sp. Plant. 579: 1753.

TYPE: "Hab. in Europae cultis" (LINN—photo!).

AFGHANISTAN. Nangarhar: Ashpi pass, *Neubauer* 1051; between Nischai and Ningalan, *Neubauer* 791.

W PAKISTAN. Swat: Utror, 2200 m, *Rechinger* 30805; Kalam, 2500 m, *Lamond* 1827. Chitral: Drosh, 3200 m, *Bowes Lyon* 184; Ziarat (Lowarai pass), 2500 m, *Stainton* 2562.

RANGE: throughout Eurasia.

3. *L. rhomboideum* (Benth.) Benth., Lab. Gen. et Sp. 509 (1834). Ic.: Biol. Skr. 8, 1: fig. 34, 1954 (sub *Eriophyton afghanicum* Rech. f.)

Syn.: *Erianthera rhomboidea* Benth. in Hook., Bot. Misc. 3: 380 (1833).

Eriophyton afghanicum Rech. f. in Biol. Skr. 8, 1: 58 (1954).

TYPE: Kanaour, *Royle*.

AFGHANISTAN. Nuristan: Magnaul, 3600 m, *Koelz* 12782 (holo *Eriophyton afghanicum*—W). Badakshan: W Wakhan, Quazi-Deh valley, 3700 m, *Roemer* 162.

W PAKISTAN. Kurram: Seratigah and Sikaram, 4000–4500 m, *Aitchison* 831. Chitral: above Marmano Shal, 4000 m, *Wendelbo*; Sora Lasht, *Bowes Lyon* 1092; Rosh Gol, NE of Tirich Mir, *Stainton* 2799.

RANGE: NE Afghanistan, W Pakistan, Kashmir, Tibet.

A very distinct high alpine species. Although no specimens of the C Asiatic *L. anomalum* Juz. (= *Erianthera anomala* Juz.) have been seen, it is probably very closely allied to *L. rhomboideum*. In Fl. URSS (21: 141, 1954) this species is said to be probably endemic to the Pamir-Alai and Tian Shan.

LEONURUS L., Sp. Plant. 584 (1753); Gen. Plant. ed. 5: 641 (1754).

1. *L. cardiaca* L., Sp. Plant. 584 (1753) s.l. including *L. nuristanicus* Murata (Acta Phytotax. Geobot. 17: 73, 1958). Ic.: Fl. Afghanistan fig. 87, 1960 (sub *L. nuristanicus*).

TYPE: "Hab. in Europae ruderalis" (LINN—photo!).

AFGHANISTAN. Nuristan: Nishei, *Edelberg* 778; Shtive, *Edelberg* 1281; Netchin-gel, 3300 m, *Edelberg* 1988; Pashki, 2500 m, *Edelberg* 1317. Kabul: Paghman valley, 2900 m, *Hedge & Wendelbo* W. 5063, *Neubauer* 692; Hauz-i Mahiha 2500 m, *Koeie* 2425.

W PAKISTAN. Kurram: Kurram valley, *Aitchison*. Chitral: Shishi (Lohigal An), 3650 m, *Bowes Lyon* 140; Bashgalian, 3050 m, *Stainton* 2698; Shokar Shal, 3500 m, *Wendelbo*; Chitral, *Harriss* 16489.

RANGE: SW Asia to the Himalayas, Europe.

No specimens of *L. nuristanicus* have been seen but the description and illustration suggest that it is merely a form of *L. cardiaca*. The character of the adpressed indumentum on the leaves was stressed by Murata but this type of indumentum occurs frequently in *L. cardiaca* throughout its range.

LEUCAS R. Br., Prodr. 504 (1810).

1. *L. mollissima* [Wall. ex] Benth. in Wall., Pl. As. Rar. 1, 62 (1830).

TYPE: 'Hab Napalia et in jugo Pundua dicto' *Wallich* cat. 2054.

W PAKISTAN. Swat: Swat, 914 m, *Gatacre* 17413.

RANGE: W Pakistan, Nepal, India, Ceylon, Burma, Malaysia, Indo-China, China.

R. R. Stewart has reported (in litt.) two annual species, *L. nutans* Spreng. from Swat and *L. capitata* Desf. (syn. *L. cephalotes* (Roth) Spreng.), from Chitral, Dir and Swat but no specimens of either have been seen.

LOPHANTHUS Adans., Fam. Pl. 2: 194, 572 (1763) p.p.

1. *L. lipskyanus* Ik.-Gal. & Nevski in Trudy Bot. Inst. Akad. Nauk URSS 1, 4: 325 (1937).

Syn.: *L. schtschurowskianus* (Rgl.) Lipsky var. *kulabensis* Lipsky in Trudy Bot. Sada 18: 83 (1901).

Several syntypes from the Pamir-Alai (LE—n.v.).

AFGHANISTAN. Badakshan: Doavi, 21 vi 1959, *Lindberg* 718.

RANGE: NE Afghanistan, Pamir-Alai.

Although very little material of *L. lipskyanus* and *L. schtschurowskianus* has been seen, they appear to be very closely allied species. The Afghan plant has been named *L. lipskyanus* on account of the narrow calyx teeth and the loose, few-flowered racemes but until type material and a range of gatherings has been examined, the identification must be considered as provisional.

Lophanthus is very closely allied to *Nepeta* and only differs from it in the scarcely divergent thecae and, to some extent, general facies. Its exact definition and limits have always been uncertain; different authors have rarely agreed about what it should and should not include. An example of an intermediate species is *Nepeta sessilifolia* Bge. It is similar to *L. lipskyanus* in leaves, habit, calyx structure, the clearly exserted stamens and the tendency to have resupinate flowers. It also has scarcely divergent thecae and on all these counts could equally well be considered as a *Lophanthus*. *N. sessilifolia* is only known from W Iran.

LYCOPUS L., Sp. Plant. 21 (1753); Gen. Plant. ed. 5: 12 (1754).

1. **L. europaeus L.**, Sp. Plant. 21 (1753).

TYPE: "Hab. in Europae ripis humentibus" (LINN—photo!).

AFGHANISTAN. Parvan: Salang, *Rechinger* 31685. Badakshan: Jurm, *Frey* 473; Barak, *Yosii* 1003 (n.v.). Qataghan: Pol-i-Khomri, *Kitamura* (n.v.)
Kabul: Tang-i Gharu, *Hedge & Wendelbo* W. 5096; Kabul, *Neubauer* 46.
Bamian: Doab, 1400 m, *Koeie* 2879. Paktia: inter Qasim Khel et Dobandi, 3300 m, *Rechinger* 32368.

W PAKISTAN. Kurram: Kurram valley, *Aitchison*. Chitral and Swat (R. R. Stewart in litt.).

RANGE: SW Asia and Europe.

MARRUBIUM L., Sp. Plant. 582 (1753); Gen. Plant. ed 5: 254 (1754).

The genus requires revision with study of all type material before definite conclusions about specific limits can be reached. With the amount of material now available it is clear that the calyx characters hitherto used for specific differentiation are very variable and often depend on the maturity of the plant (see fig. 1, c and f).

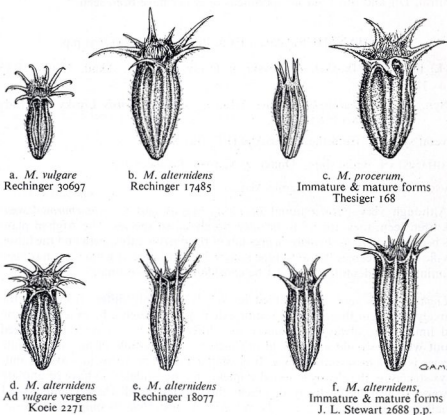


FIG. 1. Calyxes of *Marrubium* species. All $\times 4$.

In this account, three species are recognised from our area; intermediate forms are also found and discussed under *M. alternidens*.

1. Calyx teeth (6)–8–10 2
- + Calyx teeth 5 3. *M. procerum* Bge.
2. Calyx teeth subequal; verticils 1–1.5 cm diameter 1. *M. vulgare* L.
- + Calyx teeth alternately long and short; verticils 2–2.5 cm diameter 2. *M. alternidens* Rech. f.

1. *M. vulgare* L., Sp. Plant. 583 (1753).

TYPE: "Hab. in Europae borealioris ruderatis" (LINN.—photo!).

AFGHANISTAN. prov. ? : Mamakhel, 1220 m, *Koelz* 11578. Kabul: Jagdalek, 1670 m, *Koelz* 8245.

W PAKISTAN. Chitral: Drosh, 1370 m, *Stainton* 2281. Swat: between Madyan & Kolaila, *Rechinger* 30697. Kohat: 20–30 km W Kohat towards Thal, 500–700 m, *Rechinger* 30199. Kurram: between Amal Kot and Sadda, 1400 m, *Rechinger* 30967. Waziristan ? : *J. L. Stewart* 2688 p.p. Quetta: Fort Sandeman, *Duthie* 18980.

RANGE: Eurasia and naturalised throughout the temperate regions of the world.

2. *M. alternidens* Rech. f. in Oest. Bot. Zeit. 99: 37 (1952).

TYPE. Persia: Shahrud–Bustam, in declivibus australibus montium Shahvar and Nekarman (Nigarman), c. 2000 m, *Rechinger* 6239 (holo–W).

AFGHANISTAN. Herat: 60 km S of Herat, 1400 m, *Koeie* 2271. Mazar-i-Sharif: Aq Kupruk, 750 m, *Hedge & Wendelbo* W. 3944; Cheshma-i-Shafa, 750 m, *Hedge & Wendelbo* W. 3956; Cheshma-i-Shafa to Unai, 2900 m, *Rechinger* 18077. Bamian: Bamian, 2500 m, *Hedge & Wendelbo* W. 4646. Badakshan: Faizabad, *Edelberg* 1418. Qataghan: 8 km S of Ishkamish, 1200 m, *Podlech* 10748; Khost-o-Fereng, Yul Pässe, 2500 m, *Podlech* 11913; Pol-i-Chomri, *Amsel* s.n.; Anderab Valley, 1550 m, *Furse* 6551, *Podlech* 10929; Dushi to Doab, 950 m, *Hedge & Wendelbo* W. 4093, *Rechinger* 16561; Salang Pass, 2200 m, *Rechinger* 31628. Parvan: Panjshir Valley, Dasht-e-Revat to Darrah Khauvak, 2300 m, *Hedge & Wendelbo* W. 5312. Kabul: Kabul to Lataband, 2100 m, *Lamond* 1971, *Rechinger* 31101; Kuh-i-Nanagak, south of Gulbagh, *Hedge & Wendelbo* W. 3189; Kabul to Gardez, Altimur Pass (Kotal Tera), 26–2700 m, *Lamond* 2391; Paghman, 2560 m, *Gilli* 3593. Paktia: between Said Karam and Ahmad Khel, 22–2600 m, *Rechinger* 32186. Ghazni: Mokur, 2200 m, *Koeie* 3843; Sang-i Masha, 2500 m, *Rechinger* 17485; Sardalu, W of Qarabagh, 23–2500 m, *Rechinger* 17342.

W PAKISTAN. Chitral: Reshun, Chitral–Mastuj track, 1830 m, *Stainton* 2447. Swat: Thana, between Malakand and Barikot, 700 m, *Rechinger* 30462, *Lamond* 1660. Peshawar: Khyber Pass, 650–1000 m, *Rechinger* 30302, *Lamond* 1609. Kurram: Parachinar, 1500–1700 m, *Rechinger* 30946. Waziristan: Wana, *Duthie* 15655; ? , *J. L. Stewart* 2688 p.p. Quetta: Hanna Valley, 2150 m, *Lace*

3784 (as *M. vulgare*); Sariab Road, Forest Dept. Nursery, 1700 m, Lamond 904, Rechinger 28814; Urak, Repp s.n.

RANGE: SW Asia to W Pakistan, Balkans.

M. alternidens is the most common species in our area but forms resembling the other two species do occur. The calyx teeth of Koeie 2271, often strongly curved and of more or less the same length, approach those of *M. vulgare* (see fig. 1, d). Occasionally, in a young state, the small calyx teeth are not or scarcely evident and it is only at maturity that a definite determination can be made. This is clearly illustrated by J. L. Stewart 2688 (fig. 1, f), Rechinger 16187, 18077 (fig. 1, e), Hedge & Wendelbo W. 3956 and Podlech 10748.

The type of the recently described *M. duabense* Murata (Acta Phytotax. Geobot. 22: 23 (1966)) has not been seen but from the illustration in Additional Reports, (134, Kyoto 1966) it matches these immature forms mentioned above. *M. alternidens* is found at rather lower altitudes than *M. procerum* and the locality for Murata's plant, between Bulola and Doab in Prov. Parvan, falls within its range.

3. *M. procerum* Bge. in Mem. Acad. Sc. Petersb. 7 ser., 22, 1: 66 (1873). (Lab. Pers.)

TYPE. Persia. Khorasan: in montosis inter pagos Derrud et Dshegar, inter urbes Nischapur et Meschhed, Bunge & Bienert (K, LE?, P? G?).

AFGHANISTAN. Herat: Upper Hari Rud, 2500 m, Koelz 3394 (n.v.). Ghorat: in jugo Shutur Khan Kotal inter Qala Ahangaran et Qala Sharak, 2725 m, Rechinger 18863; in jugo Kotal Nayak inter Naourak et Taiwara, 2660 m, Rechinger 18971. Bamian: Band-i-Amir, ad lacum Band-i Panir, 2800 m, Rechinger 18357; Lorinj Pass, 3050 m, Koelz 13748. Kabul: Besud, Kamarak Valley, 2900 m, Thesiger 168; Panjao, 2700 m, Hedge & Wendelbo W. 4909. Ghazni: in jugo Kotal Shaghanak inter Ghazni et Okak, 3400-3500 m, Rechinger 17814. Parvan: Panjir, inter Dasht-i-Rewat et Parian, 2600 m, Podlech 12284. Nuristan: Rangul Valley, 3352 m, Thesiger 1470. Paktia: in jugo Sata Kandao inter Gardez et Khost, 22-2800 m, Rechinger 32146.

RANGE: NW, C & E Afghanistan, E Iran.

Comparison with rather inadequate type material at Kew showed that the calyces of Bunge's plant are smaller than those of the cited Afghan specimens. Examination of more adequate type material and further collecting from the type locality and surrounding areas will show whether it is correct to treat the Persian and Afghan plants as conspecific.

Always of clearly perennial habit, *M. procerum* is found at a slightly higher altitudinal level than *M. alternidens*.

MENTHA L., Sp. Plant. 576 (1753); Gen. Plant. ed. 5: 250 (1754).

1. *M. longifolia* (L.) Huds., Fl. Angl. 221 (1762).

Lit.: J. Briquet, 1894: Dec. Menth. nov. (Frag. Mon. Lab.) in Bull. Herb. Boiss. 2: 694-700. 1897: Pflanzenfam. 4, 3a: 321-322. A. Borissova, 1954: Lab. Nov. in Not. Syst. Leningrad 16: 280-285.

With the amount of material now available it is difficult to subdivide this widespread and very variable Euro-Asiatic species. So many intermediates occur between the previously recognised subspecies and varieties that it is best, at least within our area, to treat the whole complex as one polymorphic species with two apparently distinct subspecies. In the material examined it is interesting to note that about 40% are male-sterile sex forms. No attempt has been made to correlate the taxa with Borissova's treatment of the Soviet C Asiatic material.

1. Verticils usually contiguous; leaves (at least the lower) \pm sessile, seldom darker on the upper surface subsp. *longifolia*
- + Verticils usually clearly distinct; leaves all with a \pm distinct petiole, often darker on upper surface subsp. *himalaiensis* Briq.

subsp. *longifolia*

Syn.: *M. spicata* L. var. *longifolia* L., Sp. Plant. 576 (1753).

M. incana Willd., Enum. Pl. Hort. Berol. 609 (1809).

M. royleana [Wall. ex] Benth. in Wall., Pl. As. Rar. 1: 29 (1830).

M. sylvestris L. var. *stenostachya* Boiss., Fl. Orient. 4: 543 (1879).

Type in Hort. Cliff. (n.v.)

AFGHANISTAN. Herat: Chisht, *Rechinger* 19199a and b. Farah: Khormalik, between Farah and Delaram, 800 m, *Rechinger* 19278. Ghorat: Qala Sharak, *Rechinger* 19158; SW Naourak, 2480 m, *Rechinger* 18942. Mazar-i Sharif: Balkh, 400 m, *Hedge & Wendelbo* W. 3852. Bamian: Bamian to Band-i Amir, 2800–3000 m, *Rechinger* 18188. Orozgan: Dorahi Tarbulak, between Panjao and Lal, 2700 m, *Rechinger* 18801. Kandahar: Pirzada, near Kandahar, *Koeie* 2079. Ghazni: Sang-i Masha, 2500 m, *Rechinger* 17461. Kabul: 4 km E Panjao, 2800 m, *Rechinger* 18636; Abdullah, Bisut to Unai, 2800 m, *Hedge & Wendelbo* W. 5046; Kabul, road to Sarobi, 1700 m, *Rechinger* 16884. Parvan: Shibar, *Lindberg* 761. Qataghan: Salang Pass, 2200 m, *Lamond* 2255, *Rechinger* 31656; Qunduz Valley near Doshi, 850 m, *Rechinger* 16541. Badakshan: Khost-o Fereng, 2600 m, *Podlech* 11994; Minjan, 2300 m, *Edelberg* 1442; Wakhan, Ab-Gaj, 3200 m, *Roemer* 391. Paktia: Dre Kalla to Qasim Khel, *Rechinger* 32311.

W PAKISTAN. Chitral: Laspur Gol, SE of Mastuj, 3350 m, *Stainton* 3101. Quetta: Ziarat, 2440 m, viii 1889, *Lace*.

RANGE: Himalayas to China, SW Asia, Europe and naturalised in temperate regions throughout the world.

Although there is great variation in the specimens cited above there is a tendency to form distinct local populations. The specimens from Qataghan and Badakshan generally have large rather coarsely toothed leaves while some of the most south-westerly of our records (e.g. *Rechinger* 19278, 19158) have narrow lanceolate leaves. From the centre and east of the area lies a group intermediate between subsp. *longifolia* and subsp. *himalaiensis*. These specimens have clearly petiolate leaves, but resemble subsp. *longifolia* in general facies; only five of the seventeen specimens examined in this group had fertile stamens. Included in this group are:—Afghanistan. Bamian?: Kala Sarkari, 1520 m, *Koelz* 13900. Kabul: Hauz-i Mahiha, *Koeie* 3378 p.p.; Gulbagh, 1800 m,

Gilli 3439; Tang-e Gharu, *Lindberg* 755. Parvan: Panshir, *Fairservis* 5. Nangarhar: Kuschtos, *Neubauer* 3267. Gardez: SE of Gardez on road to Khost, 2400–2700 m, *Rechinger* 32061. W Pakistan. Waziristan: Razmak, 1980–2280 m, *Lowndes* 5.

subsp. *himalaiensis* Briq., *Pflanzenfam.* 4, 3a: 322 (1897). Ic. Kitamura, *Fl. Afghanistan*, fig. 88, (1960) (sub *M. afghanica*).

Syn.: *M. afghanica* Murata in *Acta Phytotax. Geobot.* 17: 73 (1958).

TYPE: not designated.

AFGHANISTAN. Kabul: Tang-i Gharu, *Lindberg* 775. Nangarhar: Kurder valley, branch of Pech valley, 1600–1700 m, *Neubauer* 773, 828; Kandai (Pech), *Rechinger* 32459; Kunar valley, 40–60 km NE Jalalabad, 750–900 m, *Rechinger* 32409; Barikot, 850 m, *Gilli* 3437; Jalalabad, Darunta, *Neubauer* 850.

W PAKISTAN. Chitral: Golen Gol, 2133 m, *Bowes Lyon* 28. Swat: Kalam, 2200 m, *Rechinger* 19439; Ushu, 2400 m, *Rechinger* 19519. Malakand: Malakand, 700 m, *Rechinger* 19614. Kurram: Parachinar, *R. R. Stewart* 28045; Hangu, *Y. M. Khan* 35. Quetta: Ziarat, viii 1887, *Lace* 3405 p.p.

RANGE: E Afghanistan, NW Pakistan, Himalayas, Tibet.

A much confused taxon to which different names have probably been applied in different parts of the world.

OTHER SPECIES RECORDED

The following are probably cultivated or escapes from cultivation:

M. arvensis L., *Sp. Plant.* 577 (1753).

AFGHANISTAN. Kabul: Kabul, 1770 m, *Gilli* 3446.

M. spicata L. *Sp. Plant.* 576 (1753) emend. Huds., *Fl. Angl.* 221 (1762).

AFGHANISTAN. Kabul: Kabul, cultivated, *Neubauer* 44. Kandahar: Arghandab, *Volk* 1364.

W PAKISTAN. Kurram: Parachinar, 1830 m, *R. R. Stewart* 28046.

MICROMERIA Benth. in *Bot. Reg.* 1282 (1829).

1. Cymes 2-several flowered; calyx 2–4 mm

+ Cymes 1-flowered; calyx \pm 7 mm

1. *M. biflora* (Ham.) Benth.

2. *M. subulifolia* Rech. f.

1. *M. biflora* (Ham.) Benth., *Lab. Gen. et Sp.* 378 (1835–36). Ic.: Jacquemont, *Voy. Ind. Bot.* t. 124 (1844); Wight, *Spic. Neilg.* 2, t. 199 (1851).

Syn.: *Thymus biflorus* Ham. in Don, *Prodr. Fl. Nep.* 112 (1825).

TYPE. Nepal. 'Hab. in Suemba Nepaliae superiores'. *Hamilton*.

AFGHANISTAN. Nangarhar: Pech River at Chigha Serai, 820 m, *Gilli* 3455; Ningalam to Darim, 1300–1900 m, *Neubauer* 956; Chigha Serai to Kandai, *Rechinger* 32430. Paktia: Ali Khel, *Aitchison* (n.v.)

W PAKISTAN. Chitral: Arandu, SW of Drosh, 1219 m, *Stainton* 2309; Bundai, *Harriss* 16551. Swat: Khawazakhiela to Shangla, 1300 m, *Lamond* 1696, *Rechinger* 30599, 30639; Madyan, *R. R. Stewart* 24419; Madyan to Kalam, *Rechinger* 19378; Mingora, *Ali*. Malakand: Malakand, 800 m, *Lamond* 1650, *Rechinger* 30451, *Weatherhead* 9. Peshawar: Cherat, *Lamond* 1570, *Rechinger* 30248. Kurram: Parachinar, *Afendi* 116.

RANGE: E Afghanistan, NW Pakistan, Himalayas, S India (Nilghiri Hills), China, Africa.

2. *M. subulifolia* Rech. f. in Biol. Skr. 8, 1: 74 (1954). Ic.: lc. fig. 45 and fig. 43 f.

TYPE. Afghanistan. Bamian?: Baligali Pass, 2750 m, dry cliff face, clumps, flowers prob. blue-purple, 30 viii 1939, *Koelz* 13857. (holo-W, BPI-n.v.).

RANGE: C Afghanistan.

The characters, given in the original description, of divergent thecae, posterior stamens longer than the anterior and the 15-nerved calyces are diagnostic for tribe Nepeteae rather than Saturineae including *Micromeria*. However examination of the rather inadequate Vienna specimen did not confirm these characters; the corolla studied contained an insect larva and confusion may have arisen through dissection of damaged flowers. The generic position of this interesting plant is therefore uncertain and more material is needed before its affinities can be correctly determined but it is quite likely that it does not belong to *Micromeria*.

NEPETA L., Sp. Plant. 570 (1753); Gen. Plant. ed. 5: 249 (1754).

With a current total of forty species, *Nepeta* is the largest genus of the Labiatae in the Afghanistan region. It includes some very distinct species and others that are extraordinarily polymorphic. As examples of the first may be cited *N. olgae* Rgl., *N. bellevii* Prain, *N. rechingeri* Hedge and *N. satireioides* Boiss. None of them has a close ally. Further examples of distinct species are two which are sometimes placed in separate genera—*N. sewerzowii* Rgl. or *Drepanocaryum sewerzowii* (Rgl.) Pojark. and *N. korshinskyi* Lipsky or *Kudrjaschevia korshinskyi* (Lipsky) Pojark. Contrasted with these taxonomically isolated and morphologically uniform species is the variation shown by such species as *N. podostachys* Benth., *N. pubescens* Benth., *N. discolor* Benth. and *N. elliptica* Benth. In this species group, it seems impossible to arrive at any kind of satisfactory classification. This mixture of distinct and indistinct species is a most interesting feature of *Nepeta* taxonomy in the Afghanistan—C Asia region. In some other parts of SW Asia, as for instance in Turkey, *Nepeta* is represented by as many or more species but here the character variation is much less and distinct relict species, for the most part, are absent. Furthermore, the close generic allies of *Nepeta*—*Lophanthus*, *Lallemantia* and *Dracocephalum*—are well represented in the area under review. Together, these facts of present day distribution, character concentration and relict concentration at least suggest the possibility of the Afghanistan—C Asia region as a centre of origin of this large Euro-Asiatic complex. The general picture is similar to that already discussed in *Salvia* (Notes R.B.G. Edinb. 26: 407–410, 1966).

Several of the species dealt with in this account are of uncertain status. Some are only known from few, and others from inadequate, gatherings. Others are Himalayan species that are at the end of their range in Afghanistan and to clarify their nomenclature and taxonomy requires a thorough re-investigation and assessment of the variation range in the Himalayan material. In yet other cases, it is essential to study the Soviet C Asiatic species and their limits.

One of the chief difficulties in the taxonomy of *Nepeta* is the absence of any stable character. Indumentum, leaf shape, calyx and corolla characters are all so variable that, very often, little reliance can be placed on them. Similarly, the general facies of the plant is often affected by its environment or even, in the case of perennial species, by the age of the plant. It seems unlikely that any 'new' character is going to give much help in trying to define natural taxa. For instance, it would be over-sanguine to expect that the biochemist, palynologist or embryologist is going to come up with a magic character. It should be accepted that within the existing taxonomic framework, there are numerous 'species' in *Nepeta* that are quite unsatisfactory to define and delimit.

One character, however, that has certainly been neglected in the past is the shape, size, and structure of the nutlets. Examination of the nutlets of a large number of gatherings showed that within a particular species there was relatively little variation in the nutlets and, frequently, there were significant differences between species. These are of such a nature that it would be quite possible to make a key to the species or species group based solely on the texture, size, and areole shape of the nutlets. Fig. 2, with a few exceptions, illustrates the nutlets of the species dealt with in this account. There seems little doubt that research into nutlet anatomy would be a rewarding and interesting task.*

1. Annual	2
+ Perennial	11
2. Inflorescence capitate or subcapitate	3
+ Inflorescence of loose axillary cymes or flowers in leaf axils	8
3. Inflorescence and leaves covered with long floccose hairs	4
+ Inflorescence and leaves not floccose	5
4. Terminal inflorescence long pedunculate; plant with slender elongated internodes	38. <i>N. spathulifera</i> Benth.
+ Terminal inflorescence not or scarcely pedunculate; internodes short	39. <i>N. eriosphaera</i> Rech. f.
5. Bracts linear-subulate, recurved, hard	33. <i>N. pungens</i> Benth.
+ Bracts ovate or linear-ovate, not recurved, soft	6
6. Plant glandular; inflorescences long pedunculate	32. <i>N. rechingeri</i> Hedge
+ Plant eglandular; inflorescences not pedunculate	7
7. Bracts and leaves oblong-linear to linear-lanceolate	35. <i>N. daenensis</i> Boiss.
+ Bracts and leaves ovate or ovate-lanceolate	36. <i>N. bracteata</i> Benth.

* A recent paper confirms this. Entitled "On the significance of the anatomical structure of the pericarp for the taxonomy of the tribe *Nepeteae*", it was published, in Russian, in *Botanicheskii Zhurnal* 52, 1: 33-41 (1967).

8. Upper leaves linear, recurved, subtending the cymes 34. *N. satureioides* Boiss.
- + Upper leaves ovate or lanceolate, not recurved, not subtending the cymes; cymes pedunculate 9
9. Calyx oblique at base and inflated; nutlets falcate 31. *N. sewerzowii* Rgl.
- + Calyx rounded at base, not inflated; nutlets not falcate. 10
10. Leaves rounded or cuneate at base; calyx pubescent 30. *N. micrantha* Bge.
- + Leaves cordate at base; calyx villous 18. *N. hindostana* (Roth) Haines
11. Inflorescence a capitulum or a continuous or slightly interrupted spike 12
- + Inflorescence of more or less distinct verticils occasionally the terminal ones somewhat condensed, or loosely cymose 22
12. Inflorescence a capitulum 13
- + Inflorescence a spike. 17
13. Corolla 8–10 mm; rootstock tuberous 37. *N. raphanorhiza* Benth.
- + Corolla more than 15 mm; rootstock never tuberous 14
14. Leaves irregularly lobed; bracts clearly longer than calyces; prostrate or ascending scree plants 1. *N. longibracteata* Benth.
- + Leaves regularly lobed; bracts not or scarcely longer than calyces; erect plants 15
15. Corolla 18–24 mm with a narrow tube; leaf bases subcordate 14. *N. glechomifolia* (Dunn) Hedge
- + Corolla c. 15 mm with a broad tube; leaf bases cuneate 16
16. Plant greenish with a scattered indumentum; upper internodes elongated 16. *N. pamirensis* Franch.
- + Plant greyish or whitish with a thick indumentum; upper internodes short 15. *N. leucocyanea* Rech. f. & Koeie
17. Bracts broad, ovate, clearly longer than calyces 18
- + Bracts narrow lanceolate or linear usually shorter than calyces 19
18. Plant up to 100 cm high; leaves with a thin indumentum below; bracts often purple 8. *N. laevigata* (D. Don) Hand.-Mazz.
- + Plant c. 30 cm high; leaves with a dense white indumentum below; bracts green 7. *N. discolor* Benth.
19. Leaves elliptic in outline with a regularly serrate margin, sessile or subsessile 5. *N. elliptica* Benth.
- + Leaves lanceolate, ovate or linear 20
20. Leaves narrow linear or linear-oblancheolate. 4. *N. oblancheolata* Rech. f.
- + Leaves ovate or lanceolate 21
21. Leaves 3–5 cm long, somewhat serrate; spike and stem beneath it densely pubescent 6. *N. pubescens* Benth.
- + Leaves 1–2.5 cm long, often deeply serrate; spike glabrous or pubescent 3. *N. podostachys* Benth.

34. Leaves broad ovate, greenish above, pannose below; verticils covered in a thick floccose indumentum 13. *N. olgae* Rgl.
 + Leaves ovate or oblong, not pannose below; verticils not floccose 35
35. Calyx without or with only rudimentary teeth 21. *N. suavis* Stapf
 + Calyx teeth developed 36
36. Bracts membranous, longer than calyces; leaves up to 9 cm long; areoles of nutlets horse-shoe shaped 24. *N. bellevii* Prain
 + Bracts not membranous, equalling or shorter than calyces; leaves less than 3 cm; areoles of nutlets not horse-shoe shaped 37
37. Bracts c. $\frac{1}{3}$ of calyx length; corollas (and often calyces) violet 20. *N. rugosa* Benth.
 + Bracts $\frac{1}{3}$ –1 \times calyx length; corolla white, yellowish or violet 38
38. Calyx 5 mm 39
 + Calyx 6–10 mm 40
39. Bracts c. 2.5 mm; stems with few leaves 28. *N. heterotricha* Rech. f.
 + Bracts 4–5 mm; stems leafy 26. *N. xylorhiza* Rech. f.
40. Calyx c. 10 mm; verticils \pm approximating; stems leafy 27. *N. prainii* Duthie
 + Calyx c. 6 mm; at least lower verticils distant, uppermost sometimes approximating; stems with few leaves 25. *N. juncea* Benth.

1. *N. longibracteata* Benth., Lab. Gen. et Sp. 737 (1835). Ic.: Jacquemont, Voy. Ind. Bot. t. 137 (1844).

TYPE. Kashmir (?): "in lapidosis mobilibus prope Kang-rang-ghan-ti, *Jacquemont*" (P—n.v.)

AFGHANISTAN. Nuristan: Sanglech, 4000 m, *Koelz* 12637. Badakshan: W Wakhan, Quazi-Deh-Tales, 4200 m, *Roemer* 195; E Wakhan, Pamir-Pässe, 3900–4100 m, *Roemer* 353; Mt. Noshag, *Yosii* 671 (n.v.).

W PAKISTAN. Chitral: Chumarkhan pass, E of Mastuj, 4000 m, *Stainton* 2924; Laspur (Reshun), 4400 m, *Bowes Lyon* 115; Barum Gol above Jamishi Ghochar, 4500 m, *Jörstad*.

RANGE: NE Afghanistan, Gilgit, Chitral, Kashmir, Pamir-Alai.

A very distinct high alpine scree species, recorded between 3900 and 4700 m in the area under consideration and collected up to 5000 m in Gilgit.

2. *N. glutinosa* Benth., Lab. Gen. et Sp. 735 (1835). Ic.: Komarov, Fl. URSS 20: t. 19, fig. 2 (1954).

TYPE. Tibet (?): "inter Poyé et Riei, *Jacquemont* 1713" (K).

AFGHANISTAN. Parvan: Panjshir valley, Darrah Rastagal above Mukeni, *Hedge & Wendelbo* W. 5156. Badakshan: Darrah-i-Parshui, 3700 m, *Frey* 236; Wakhan, Quazi-Deh, 3600 m, *Roemer* 130. Qataghan: Khost-i-Fereng, 3800 m, *Podlech* 11756 (male sterile sex form).

RANGE: E Afghanistan, Gilgit, Kashmir, Pamir-Alai, Tibet.

A densely glandular tuft-forming species with a 2 cm long blue or white corolla, *N. glutinosa* reaches its westerly limit in E Afghanistan. At least in Afghanistan, *N. glutinosa* has a fairly narrow altitudinal range growing between 3300 and 4000 m.

3. *N. podostachys* Benth. in DC., Prodr. 12: 372 (1848). Ic.: Bot. Tidsskr. 28: fig. 2, (1908) (sub *N. paulsenii* Briq.).

Syn.: *N. subincisa* Benth. in DC., Prodr. 12: 373 (1848).

N. paulsenii Briq. in Bot. Tidsskr. 28: 235 (1908).

N. koelzii Rech. f. in Biol. Skr. 8, 1: 34 (1954).

TYPE. Afghanistan: (possibly from Younutt near Bamian), Griffith (holo—K).

AFGHANISTAN. Bamian: Band-i Amir, 2800 m, *Rechinger* 18305, *Volk* 2844; Erak, Griffith (type of *N. subincisa*—K); Hadjigak, *Rechinger* 18502. Paktia: inter Qasim Khel et Dobandi in jugo Shutargardan, 3300 m, *Rechinger* 32367. Gardez: montes Safed Kuh, Altimur, *Rechinger* 31917. Ghazni: Sang-i Masha, *Rechinger* 17456; inter Qarabagh et Sang-i Masha, *Rechinger* 17407. Kabul: Abdullah, between Bisut and Unai, *Hedge & Wendelbo* W. 5043; Sar-e-Cheshme, *Hedge & Wendelbo* W. 4465; Unai, *Hedge & Wendelbo* W. 4546; Paghman, 4000 m, *Hedge & Wendelbo* W. 5084; Paghman, *Rechinger* 17103, *Gilli* 3512. Parvan: Panjshir valley, Darrah Shalzur, *Hedge & Wendelbo* W. 5398; Salang pass, *Kasy* 3. Nuristan: Minjan, *Edelberg* 1603; Daraim, *Koelz* 13039 (type of *N. koelzii*—W).

W PAKISTAN. Chitral: Chitral gol, *Stainton* 2684; Yarkhun, *Bowes Lyon* 1016; Tirich Mir, Barum Gol, *Wendelbo*. Kurram: Pekar Kotal, *Aitchison* 933.

RANGE: Afghanistan, W Pakistan, Pamir-Alai.

Very common in Afghanistan and represented by a large number of herbarium specimens, *N. podostachys* is the most variable of all the species discussed in this account. In leaf size, shape and degree of toothing, in indumentum, density of inflorescence, bract length, calyx length and size of teeth, flower colour and habit, there is almost unending variation. From observations made in the field and from study of about a hundred herbarium sheets, there are no clear reasons for recognition of more than one species. In some areas there is a degree of similarity in the plants collected in the same region. For example, most of the specimens from the Bamian limestone have crenate leaf margins and the leaves are thickish in texture; those from the relatively wet Nuristan area often have very sharply serrate leaf margins. But despite this tendency for plants from similar regions to have a somewhat similar general facies, formal taxonomic recognition of them would result in an unending number of taxa.

The exact specific boundary of *N. podostachys* is not always clear and, although there is no definite evidence, hybridisation and introgression may well occur with other related species such as *N. pubescens* Benth., *N. oblanceolata* Rech. f. and *N. laevigata* (D. Don) Hand.-Mazz.

Although *N. podostachys* may be found in a variety of habitats (within a large altitudinal range), it generally grows near streams.

4. *N. oblanceolata* Rech. f. & Edelb. in Biol. Skr. 8, 1: 38 (1954). Ic.: l.c. fig. 22.

TYPE. Afghanistan: Nuristan, Derin, *Edelberg* 1739 (W, C—n.v.).

AFGHANISTAN. Badakshan: Darrah-i-Parshui, 3700 m, *Frey* 316.

W PAKISTAN. Swat: Kalam, 2750 m *R. R. Stewart* 24672. Chitral: Sahoni pass, *Siddiqi* 27098; Ziarat, *Toppin* 606.

RANGE: NE Afghanistan, Swat, Chitral.

In his field note, Frey remarked that this was a widely distributed species between 3600 and 4000 m. There is no doubt that *N. oblanceolata* is very closely related to *N. podostachys* and may only be an altitudinal form of that most variable species. Field observations are needed to determine its status.

5. *N. elliptica* [Royle ex] Benth. in Hook., Bot. Misc. 3: 378 (1833).

TYPE. Himalayas, Syen range, *ana.* 1832, *Royle* (K).

W PAKISTAN. Swat: beyond Ushu, *R. R. Stewart* & *A. Rahman*. Chitral: Drosh (Painogh), 3500 m, *Bowes Lyon* 182.

RANGE: Chitral, Swat, Kashmir, Kumaon.

This species is characterised by the ascending stems, compact terminal inflorescences and regularly crenate leaf margins; the records from Swat and Chitral are the most westerly stations for this Himalayan species.

N. podostachys, in some forms, approaches *N. elliptica* and the differences between them are apparently mainly those of leaf shape.

6. *N. pubescens* Benth. in DC., Prodr. 12: 373 (1848).

TYPE. Afghanistan. Bamian: Hajeejuk (Hajigak) pass, moist ravines, *Griffith* 1073a (holo—K).

AFGHANISTAN. Bamian: N side of Hajigak pass, 3000 m, *Hedge & Wendelbo* W. 4666. Kabul: Sarai Sarkharit between Unai and Hajigak passes, 2950 m, *Hedge & Wendelbo* W. 4593. Parvan: S side of Salang pass, 2700 m, *Lamond* 2179; upper Panjshir valley, 3400 m, *Podlech* 12490. Qataghan: N side of Salang pass, 2200 m, *Lamond* 2238; Andarab valley, 2250 m, *Podlech* 11036. Paktia: Hariab district, *Aitchison* 397.

RANGE: Afghanistan.

Characterised by the dense oblong spikes, the thick pubescence on the spike and below it, and the 1–2 inch cauline leaves, *N. pubescens* is similar in general facies to *N. podostachys* but can generally be distinguished by the larger, less acutely serrate leaves and the thicker indumentum on the inflorescence. Some of the extreme forms of *N. podostachys* are not always clearly different from *N. pubescens* and introgression between these species may be the cause.

N. pubescens was noted in the field as being a very variable species with a considerable range of habitat; the flower colour varied from blue-violet to white. It grew in wet meadows, river margins and in gravel.

7. *N. discolor* [Royle ex] Benth. in Hook., Bot. Misc. 3: 378 (1833). Ic.: Journ. Bot. 6: t. 82, fig. 1-4 (1868) (sub. *N. sabinei*).

Syn.: *N. sabinei* T. A. Schmidt in Journ. Bot. 6: 238 (1868).

TYPE. Himalayas, Syen range and Mussooree, Royle.

AFGHANISTAN. Badakshan: Wakhan, Badjens-Tal, Kleiner Pamir, 4200 m, Roemer 369.

W PAKISTAN. Chitral: Baroghil pass, 3800 m, Stainton 2969.

RANGE: Afghanistan, Chitral, Karakoram, Kashmir, Punjab, Nepal, Tibet.

This is the first definite record of this species from Afghanistan. It is characterised by the uninterrupted spikes, the ovate-lanceolate bracts and the serrate margins of the leaves which are often subglabrous on the upper surface and white-hoary below. In his field note, Roemer mentions that the species occurred between 3700 and 4300 m in the district east of Sarhad, Wakhan.

8. *N. laevigata* (D. Don) Hand.-Mazz., Symb. Sin. 7: 916 (1936). Ic.: Kitamura, Fl. Afghanistan fig. 90 (1960).

Syn.: *Betonica laevigata* D. Don, Prodr. Fl. Nepal. 110 (1825).

Nepeta spicata Benth. in Wall., Pl. As. Rar. 1: 64 (1830).

N. nuristanica Murata in Acta Phytotax. Geobot. 17: 74 (1958).

TYPE. Kashmir, Srinagar, Kamroop (? destroyed).

AFGHANISTAN. Nuristan: Rangul valley, 3350 m, Thesiger 1455; N of Basarak, 2350 m, Gilli 3422. Parvan: Panjshir valley, 2500 m, Hedge & Wendelbo W. 5115

W PAKISTAN. Kurram: Shendtoi, Aitchison 768. Swat: Kalam, R. R. Stewart 24673; Utror, 2500 m, Rechinger 19542 a, b; between Maina and Ilam mountain, Rodin 5485; Ushu, 2400 m, Rechinger 19492. Chitral: Madaglast, Toppin 516.

RANGE: E Afghanistan, W Pakistan, Kashmir, Himalayas (S side) to SW China.

This variable and widespread species reaches its western limit in E Afghanistan where it is a common species.

9. *N. govaniana* (Benth.) Benth., Lab. Gen. et Sp. 482 (1834).

Syn.: *Dracocephalum govanianum* [Wall. ex] Benth. in Wall., Pl. As. Rar. 1: 65 (1830).

TYPE. "Sirmore et Kamaon" Wallich.

W PAKISTAN. Swat: above Bahrein, 1820-2100 m, Rodin 5562.

RANGE: Swat, Kashmir, Hazara, Kumaon.

The Swat gathering of this distinctive yellow-flowered species is from its most westerly station.

10. *N. erecta* (Benth.) Benth., Lab. Gen. et Sp. 482 (1834).

Syn.: *Dracocephalum erectum* [Royle ex] Benth. in Hook., Bot. Misc. 3: 380 (1833).

TYPE. India, Kanaor, Royle.

AFGHANISTAN. Nuristan: Nishei, 2000 m, Edelberg 790.

W PAKISTAN. Chitral, Ziarat, Toppin 437.

RANGE: E Afghanistan, Chitral, Kashmir, Punjab, Kumaon.

This distinct, tall-growing, large flowered species reaches its western limits in Nuristan.

11. *N. clarkei* Hook. f., Fl. Brit. India 4: 663 (1885).

TYPE. Kashmir: at Tilail, 3350 m; and Kunylwan, 2280 m, Clarke (K).

AFGHANISTAN. Parvan: Panjshir valley, Shanez, streamside, 2550 m, Hedge & Wendelbo W. 5343. Nuristan: Pashki, 2500 m, Edelberg 708, 1008.

W PAKISTAN. Chitral: Dorah pass, Lutko valley, 3800 m, Stainton 3248; Birir, riverbed, 2440 m, Bowes Lyon 690; Madaklasht, NE Drosh, 3660 m, Stainton 3113; Ziarat, Toppin 434. Swat: Sho Nala, 2900 m, R. R. Stewart 25192; Kalam, R. R. Stewart 24671.

RANGE: NE Afghanistan to Kashmir.

Although generally characterised by the many-flowered verticils, remote and peduncled below, approximating above, the curved 8 mm long calyx and the c. 15 mm corolla, *N. clarkei* is a very variable species particularly in corolla size. It is another of the species from the western end of the south Himalayan slopes that reaches the limit of its distribution in NE Afghanistan.

The Nuristan specimens which were named as *N. distans* Royle (e descr.) by Rechinger and cited in Symbolae Afghanicae are, in fact, *N. clarkei*.

12. *N. floccosa* Benth., Lab. Gen. et Sp. 736 (1835).

TYPE. Kashmir: inter Nako et Chango, Jacquemont 1921 (K).

AFGHANISTAN. Bamian: Bareki Cheidan on road to Band-e Amir, 2800 m, Hedge & Wendelbo W. 4712. Kabul: in faucibus Kotal Mollah Jakub inter Behzud (Diwal Kol) et Panjao, 2600 m, Rechinger 18625. Badakshan: Wakhan, Sar-Skhaur (Langar), 2700 m, Roemer 36; Darrah-i-Parshui, 3400 m, Frey 180; Anjuman pass, 4000 m, Podlech 12431. Parvan: Panjshir valley, Hedge & Wendelbo W. 5303. Afghanistan/Pakistan: Kurram region, Sikaram, Aitchison 917.

W PAKISTAN. Chitral: Vedinkot, W of Baroghil pass, 3050 m, Stainton 2963; Laspur, (Phargam), 3050 m, Bowes Lyon 35; Harchin, Toppin 660.

RANGE: E & C Afghanistan, Chitral, Gilgit, Pamir-Alai, Kashmir, Tibet.

The following four species may be conspecific with *N. floccosa*: *N. rotundifolia* (Benth.) Benth. in DC., Prodr. 12: 392 (1848) from Kanaor; *N. gilesii* Mukerjee in Journ. Ind. Bot. Soc. 19: 85 (1940) from Gilgit; *N. pseudofloccosa*

Pojark. in Not. Syst. Leningrad 15: 293 (1953) from Darvaz; *N. vakhanica* Pojark., l.c. 296 from Soviet Wakhan.

Although no type or authentic material of these non-Afghan species has been seen, the full descriptions and, in the cases of *N. gilesii* and *N. vakhanica*, the illustrations, suggest that these are merely local variants of *N. floccosa*. If *N. rotundifolia* proves to be the same as the Afghan plant, it will have to replace the name *N. floccosa*.

A very striking species in the field on account of its round floccose leaves and the long spreading lower peduncles, *N. floccosa* varies greatly in almost every character. For example, it may be an erect plant up to 1.3 m or else it may be ascending and only 15 cm tall; the indumentum may be sparse or dense; the stems may be single or clump-forming and many; the inflorescence may be condensed into a single terminal sub-capitate head or else it may consist of many widely spaced verticils. On the basis of the fairly abundant material examined from Afghanistan, there seems no reason to recognise more than one variable species.

N. floccosa usually grows on hot, dry, stony slopes or mobile screes; sometimes it is a rock crevice plant.

13. *N. olgae* Rgl. in Izv. imp. Obshch. Lyub. Estest. Antrop. Etnogr. 34, 2: 64 (1882). [Descript. Pl. Fedtsch.]

TYPE. Turkestan, prope Ura-tube et Pachud, *O. Fedtschenko* (LE—n.v.).

AFGHANISTAN. Mazar-i Sharif: SE of Tashqurghan on road to Samangan (Aybak), 600 m, *Hedge & Wendelbo* W. 3980. Qataghan: W of Pol-i Khomri, 750 m, *Hedge & Wendelbo* W. 4052; N of Doshi, *Furse* 5981; Salang pass, N side, 1400 m, *Lamond* 2275, *Rechinger* 31695. Bamian: Darrah Siakar, 15 km S of Doab, 1500 m, *Hedge & Wendelbo* W. 3391. Badakshan: Faizabad, 300 m, *Furse*.

RANGE: N Afghanistan, Tian Shan, Pamir-Alai.

This very distinct and handsome species, with broad ovate leaves white woolly below and greenish above, has not previously been recorded from Afghanistan. It is apparently restricted to the north side of the Hindu Kush massif; in some areas, as for example near Pol-i Khomri, it is a frequent plant.

14. *N. glechomifolia* (Dunn) *Hedge comb. nov.*

Syn.: *Dracocephalum glechomifolium* Dunn in Kew Bull. 1921: 122, (1921).

TYPE. Chitral: Madaglast, 4200–4500 m, *Toppin* 564 (holo—K).

RANGE: Chitral.

The type of this species has now been examined and there is no doubt that it should be considered as a *Nepeta* and not as *Dracocephalum*. Dunn's original description of this species under *Dracocephalum* was misleading in two ways: firstly, in comparing it with *D. imberbe* Bge. which has an entirely different calyx structure of 1 large upper tooth and 4 smaller lower teeth; and

secondly, in stressing the yellow corollas whereas in fact there is no indication either from field notes or the specimen of corolla colour. The nearest allies of *N. glechomifolia* are probably *N. pamirensis* Franch. and *N. leucocyanea* Rech. f. & Koeie but they clearly differ in the shorter corollas and slightly exerted tubes. More material, especially in fruit, is needed before the affinities of *N. glechomifolia* can finally be assessed.

15. *N. leucocyanea* Rech. f. & Koeie in Biol. Skr. 8, 1: 37 (1954). Ic.: l.c. fig. 20.

Syn.: *N. minjanensis* Rech. f., l.c. 36.

TYPE. Afghanistan. Bamian (?): Koh-i Baba, 3900 m, Koeie 2622 (holo—W)

AFGHANISTAN. Parvan: Panjshir valley, Darrah Rastagal, 4200 m, Hedge & Wendelbo W. 5203; W side of Anjuman pass, 3900 m, Hedge & Wendelbo W. 5431. Badakshan: Darrah-i-Parshui, 3700–3900 m, Frey 385; Wakhan Futur Tal, 3900 m, Roemer 86; Minjan pass, Koelz 12664 (type of *N. minjanensis* Rech. f.). Bamian (?): Sard darra, 4320 m, Gilli 3544.

W PAKISTAN. Chitral: Borogial, Bowes Lyon 1011; Sora Lasht, Bowes Lyon 1086; Khot An, N of Mastuj, Stainton 2850; Tirich Mir, 4300 m, Wendelbo.

RANGE: Afghanistan, Chitral.

Although there is no doubt that *N. leucocyanea* and *N. minjanensis* are synonymous, the relationships of *N. leucocyanea* with the Pamir-Alai species *N. kokanica* Rgl., *N. pamirensis* Franch. and *N. pseudokokanica* Pojark. are not clear. Certainly these four species are very closely allied and possibly geographical races of one species. A revision of the complex throughout its area is needed before definitive names can be applied.

In Afghanistan, *N. leucocyanea* is a frequent species on rocky slopes, crevices and screes from about 3500 up to 4400 m.

16. *N. pamirensis* Franch. in Bull. Mus. Hist. Nat. 2: 345 (1896).

Syn.: *N. oxicola* Franch., l.c. 346.

TYPE. Afghanistan. Badakshan: Wakhan, Bozai Gumbaz, 4000 m, Poncins (holo P—n.v.)

AFGHANISTAN. Nuristan: Wanasgul pass, 4600 m, Thesiger 1589, 1562; Chamar pass, 4500 m, Thesiger 1360.

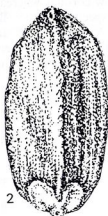
RANGE: Afghanistan, Gilgit, Pamir-Alai, Kashmir.

N. pamirensis is very closely related to *N. leucocyanea* but, with the material examined, appears to differ in the larger greener leaves, the larger calyces and thicker inflorescences.

The synonym *N. oxicola* Franch. was based on a specimen gathered in 1893, like that of *N. pamirensis*, at Bozai Gumbaz by the Frenchman Poncins whose few specimens from there are probably the earliest collections from Afghanistan Wakhan.



1. *N. longibracteata*
Schmid s.n.



2. *N. glutinosa*
Podlech 12397



3. *N. podostachys*
Podlech 12352



4. *N. oblanceolata*
Edelberg 1739



5. *N. elliptica*
Nath 4397



6. *N. pubescens*
Podlech 12490



7. *N. discolor*
Duthie 12488

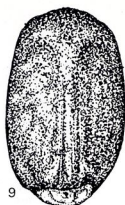


8. *N. laevigata*
Hedge & Wendelbo 5115



FIG. 2. Nutlets of Afghanistan species of *Nepeta*.

The numbers agree with the species number in the text.



9

9. *N. govaniana*
Duthie 12618



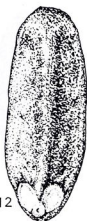
10

10. *N. erecta*
Polunin 56/470



11

11. *N. clarkei*
Podlech 12456



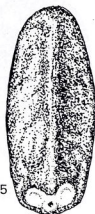
12

12. *N. floccosa*
Podlech 12431



13

13. *N. olgae*
Podlech 11321



15

15. *N. leucocyanea*
Koelz 12664



17

17. *N. cataria*
Podlech 12521



18

18. *N. hindostana*
Lamond 1602



19

19. *N. brachyantha*
Stainton 3196

FIG. 2. Nutlets of Afghanistan species of *Nepeta*.



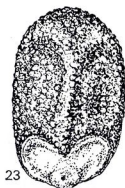
20. *N. rugosa*
Lamond 2506



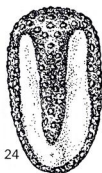
21. *N. suavis*
Thesiger 194



22. *N. griffithii*
Lamond 1659



23. *N. pinetorum*
Lamond 2410



24. *N. bellevii*
Thesiger 128



25. *N. juncea*
Podlech 11641



26. *N. xylorhiza*
Koelz 14125



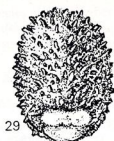
27. *N. prainii*
Ali s.n.



FIG. 2. Nutlets of Afghanistan species of *Nepeta*.



28. *N. heterotricha*
Koelz 13945



29. *N. persica*
Aitchison 642



30. *N. micrantha*
Aitchison 467



31. *N. sewerzowii*
Podlech 11051



32. *N. rechingeri*
Rechinger 16636



33. *N. pungens*
Aitchison 472

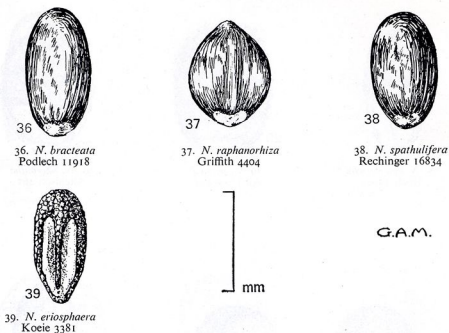


34. *N. satureioides*
Lindberg 70



35. *N. daenensis*
Furse 6644

FIG. 2. Nutlets of Afghanistan species of *Nepeta*.

FIG. 2. Nutlets of Afghanistan species of *Nepeta*.

17. *N. cataria* L., Sp. Plant. 570 (1753). Ic.: Reichenbach, Ic. Fl. Germ. 18: t. 1242 (1858).

Syn.: *N. calaminthoides* Benth., in DC., Prodr. 12: 382 (1848) p.p.
Described from Europe (LINN—photo!).

AFGHANISTAN. Qataghan: between Dushi and Doab, 950 m, *Hedge & Wendelbo* 4085; Khost-o-Fereng, 2100 m, *Podlech* 11889. NW: Zehnadir, *Koelz* 14017. Kabul: Kabul, *Griffith* 887.

W PAKISTAN. Kurram: Shalizan, *Aitchison* 887. Quetta: Ziarat, *Lace* 4056. Chitral: Mastuj, *Bowes Lyon* 1100.

RANGE: Afghanistan, W Pakistan, C and SW Asia, Europe.

18. *N. hindostana* (Roth) Haines, Bot. Bihar and Orissa 744 (1922).

Syn.: *Glechoma hindostana* Roth, Nov. Sp. 259 (1821).

Nepeta ruderalis [Buch. Ham. ex] Benth. in Wall., Pl. As. Rar. 1: 64 (1830).

N. calaminthoides [Royle ex] Benth. in Hook., Bot. Misc. 3: 379 (1833).

Type not designated.

W PAKISTAN. Peshawar: Peshawar to Torkham, Khyber pass, 650–900 m, *Lamond* 1602, *Rechinger* 30323; Peshawar to Attock Bridge, *Lamond* 1634; Attock Bridge, *Griffith*. Quetta: Fort Sandeman, *Harsukh* 20621; Sinkach, *Harsukh* 20622.

RANGE: W Pakistan, C India.

The recent find of this species at the Khyber pass suggests that it also grows in Afghanistan. Although described as an annual species, *N. hindostana* is often quite woody at the base and may be longer lived.

19. *N. brachyantha* Rech. f. & Edelb. in Biol. Skr. 8, 1: 26 (1954). Ic.: l.c. fig. 11.

TYPE. Afghanistan. Nuristan: Pashki, 2300 m, *Edelberg* 619 (holo—W, iso—C)

AFGHANISTAN. Nuristan: Gusalak, 1000 m, *Edelberg* 1569. Kabul: Bagrami, Nedjerai-Tal, *Neubauer* 1951: 271.

W PAKISTAN. Chitral: Shoghot, N of Chitral, 1820 m, *Stainton* 2749; Birir, 2560 m, *Bowes Lyon* 692; Shishi valley, 1820 m, *Bowes Lyon* 619; Shunkur, 1520 m, *Siddiqui & Rahman*.

RANGE: NE and E Afghanistan, Chitral.

There is little to add to the original description and discussion of this species as a result of the recent collections but in Chitral the plants often are woodier, more compact in habit and with smaller leaves than in the type gathering.

20. *N. rugosa* Benth. in DC., Prodr. 12: 384 (1848) exclud. pl. Felix Arab. Ic.: Biol. Skr. 8, 1: fig. 13 (1954)—(sub *N. cinereo-violacea*).

Syn.: *N. cinereo-violacea* Rech. f. & Koeie in Biol. Skr. 8, 1: 28 (1954).

N. lavandulacea Rech. f. & Koeie, l.c. 36 non Linn. f.

N. farakulumensis Murata in Acta Phytotax. Geobot. 17: 74 (1958) as nom. nov.

TYPE. Afghanistan: Younutt and Erak, *Griffith* (holo—K).

AFGHANISTAN. Paktia: Jaji, between Ali Khel and Dre Khalla, 2850 m, *Lamond* 2506; Drekhalla (Dre Khalla), *Aitchison* 841; Ahmad Khel, 2200 m, *Lamond* 2476. Gardez; inter jugum Altimur et Gardez, 2500 m, *Rechinger* 32034. Ghazni: in faucibus Say Khoshkak (Nawar Kotal) inter Okak et Behzud, 3150 m, *Rechinger* 17826; Okak, NE Dasht-e Nawar, 3000 m, *Rechinger* 17684. Ghorat: Dolaini, Darreh Garmak inter Qala Chahrak (Sharak) et Naourak, 2540 m, *Rechinger* 18896; in jugis inter Lal et Daulat Yar, 2800 m, *Rechinger* 18821. Bamian: between Shahtu pass and Panjao, 3000 m, *Hedge & Wendelbo* W. 4875; in monte Kuh-e Djoschah, NW Panjao, 2900 m, *Rechinger* 18759; Shibar pass, 2500 m, *Koeie* 2797.

W PAKISTAN. Kurram: Shalizan, *Aitchison* 625, 667.

RANGE: Afghanistan, W Pakistan.

Study of the now fairly abundant herbarium material led me to the conclusion that the two species described by Rechinger and Koeie (*N. cinereo-violacea* and *N. lavandulacea*) could neither be separated from each other nor distinguished from *N. rugosa*. There is a great range of continuous variation in leaf shape, calyx size, degree of density of the inflorescence and corolla length. Male sterile sex-forms occur quite frequently and often these specimens have few-flowered verticils, smaller calyces and corollas and are white-flowered

(e.g. *Lamond* 2476). Frequently in this species the calyces are strongly coloured violet and the facies of the plant, particularly the inflorescence, is not dissimilar to some *Lavandula* species.

21. *N. suavis* Stapf in Kew Bull. 1896: 19 (1896). Ic.: Ann. Bot. Gard. Calc. 9: t. 78 (sub. *Afridia nepetiformis*).

Syn.: *Afridia nepetiformis* Duthie in Ann. Bot. Gard. Calc. 9: 64 (1901).

TYPE. Afghanistan, *Griffith*. W Pakistan: Kurram; Kurram valley, Kaiwas and Shalizan, *Aitchison* 643 (holo—K).

AFGHANISTAN. Ghazni, *Griffith* 623. Kabul: Paghman mts., Sanlakh mt., *Thesiger* 194.

RANGE: Afghanistan, W Pakistan.

Although differing from all species in the genus in the character of the undeveloped or scarcely developed calyx teeth, *N. suavis* is, in all other respects, a typical member of the genus. Its closest ally is *N. rugosa* Benth.

22. *N. griffithii* Hedge sp. nov. (Plate 3)

Affinis *N. distante* Benth. et *N. ciliare* Benth. sed calycibus corollisque maioribus, foliis discoloribus, bracteis minoribus angustioribus differt.

Perennis, basi lignescens. *Caulis* 30–50 cm altus, ascendens, obtuse quadrangularis, internodiis mediis 6–7 cm longis, valde ramosus, pilis brevibus retrorsis tectus. *Folia* media 2.5–3.5 × 2.5–3 cm, late ovate, apice acuta, basi truncata vel cordata, plerumque prope basin latissima, margine regulariter serrata vel crenata, nervis subtus prominentibus supra inconspicuis, subtus appresse albido-lanata supra atroviridia pilis paucis brevibus laxae arachnoideo-tomentosa; petiolus 12–16 mm longus. *Folia* superiora sensim decrescentia, brevius petiolata vel sessilia. *Cymae* multiflorae, infimae ± remotae, superiorae confertae. *Bractee* c. 2.5 mm longae, anguste lineares vel subulatae, pilis longis eglandulosis et glandulis sessilibus obsitae. *Flores* brevissime pedicellati. *Calyx* 7–8 mm longus, anguste tubulosus, curvatus, ore obliquus, pilis longis eglandulosis et glandulis sessilibus, fauce intus pilis paucis eglandulosis provisus; circa ad quartem partem in dentes lineari-triangulares acutos inaequales fissus. *Corolla* lilacina, c. 12 mm longa extra albo-puberula, e calyce valde exserta; labium superius rectus 1.5 mm emarginatum; labium inferius c. 3.5 mm longus deflexum lobo mediano rotundato-reniformi. *Stamina* quam labium superius longiora, exserta. *Stylus* bifidus subexsertus vel inclusus. *Nuculae* brunneae, tuberculatae (fig. 2, 22). *Floret* Jun.

AFGHANISTAN. Nuristan: Pushut, *Griffith* 65.

W PAKISTAN. Swat: between Malakand and Barikot, near Thana, 700 m, *Lamond* 1659 (holo—E); ibid, *Rechinger* 30467; Kalangai, *Weatherhead* 11. Malakand Agency: N of Malakand, *Burt* 1505; S of Malakand towards Dargai, *Rechinger* 30875. Chitral: Chitral, 1900 m, *Schmid* 2405.

RANGE: E Afghanistan, W Pakistan.

The allies of the new species are the Kashmir and Nepalese *N. distans* Benth.

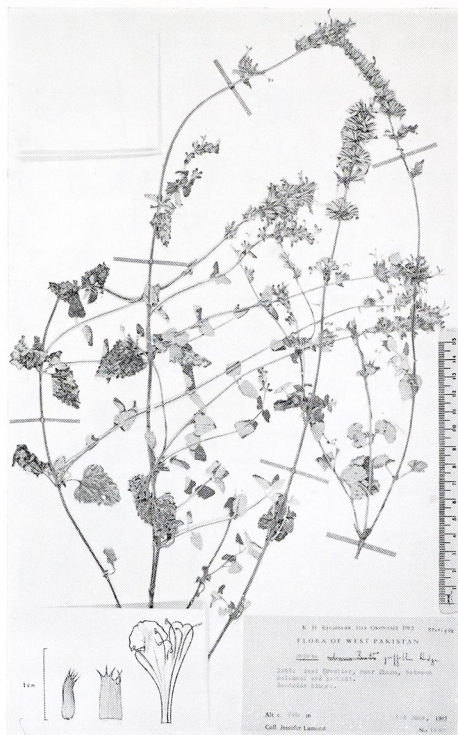


PLATE 3. Type specimen of *Nepeta griffithii* Hedge. Inset: dissections of calyx and corolla.

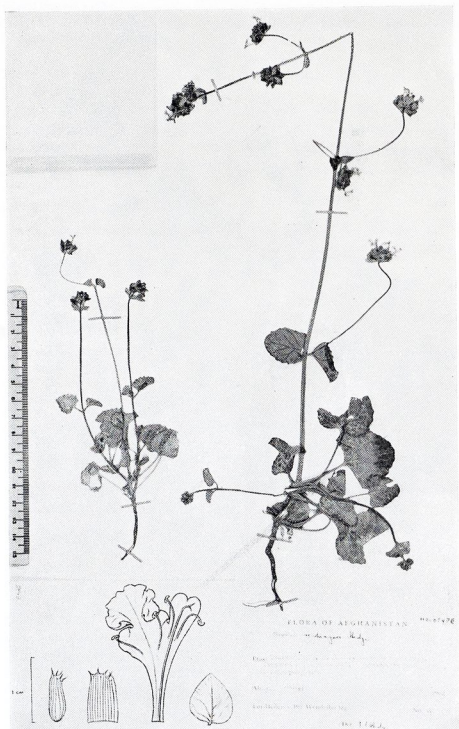


PLATE 4. Type specimen of *Nepeta rechingeri* Hedge. Inset: dissections of calyx corolla and bract.

and *N. ciliaris* Benth. All three share the characters of a tubular curved calyx tube with unequal teeth and corollas about twice the length of the calyx; in general facies, too, they are quite similar. *N. griffithii* differs in the longer calyces and corollas, the markedly discolorous leaves and the much shorter and narrower bracts.

The cited gatherings of *N. griffithii* vary in corolla length, the density of the inflorescence and in leaf size.

23. *N. pinetorum* Aitch. & Hemsl. in Journ. Linn. Soc. 19: 183 (1882). Ic.: Biol. Skr. 8, 1: fig. 17 (1954) (— sub. *N. honigbergeri* Rech. f.).

Syn.: *N. cabulica* Rech. f. in Ann. Nathist. Hofmus. Wien 51: 421 (1940).
N. honigbergeri Rech. f., l.c. 420.

TYPE. Afghanistan/Pakistan. Kurram: Pekar-Kotal to Karatigak, Aitchison 447 (holo—K, iso—E, C).

AFGHANISTAN. Kabul: Paghman, *Rechinger* 17098; Tang-i-Gharu, 1500 m, *Hedge & Wendelbo* W. 2802, *Hay* 74; Kabul to Gardez, Altimur pass (Kotal Tera) 2800 m, *Lamond* 2410. Parvan: Panjshir valley, 2 km above Gulbahar, 1700 m, *Hedge & Wendelbo* W. 2969; Salang pass, S side, 1850 m, *Lamond* 2060; Salang pass N side, 2000 m, *Rechinger* 31713. Paktia: inter Qasim Khel et Dobandi, 3300 m, *Rechinger* 32362. Nuristan: Vama, *Edelberg* 963.

W PAKISTAN. Chitral: Chitral, *Harriss* 16506; Rumbour, 2130 m, *Bowes Lyon* 652; Shishi Gol, E of Drosh, 1820 m, *Stainton* 2371; Turikho river, 2130 m, *Stainton* 2510; Markandi, 1670 m, *Harriss* 16502; Tirich Mir, Zapotili, 3500 m, *Wendelbo*.

RANGE: Afghanistan, W Pakistan.

A common species within its fairly limited range, *N. pinetorum* exhibits great variation in several features. For example, the calyx length varies between 7 and 13 mm, the calyx teeth vary from obtuse to acute, and the inflorescence ranges between compact, many-flowered and lax, few-flowered. The variation in all these features is continuous without any clear relation to distribution.

It is of interest that *N. fissa* C.A.M., a Turkish-Persian species in the same general alliance as *N. pinetorum*, but quite distinct from it, shows a comparable degree of variation in the same characters as those mentioned above. The variation in *N. fissa* has been discussed in a previous paper (*Hedge* in Notes R.B.G. Edinb. 24: 51–71, 1962).

N. pinetorum, originally described from a gathering made at the edge of pine-forests, grows in a variety of habitats; it is equally tolerant of altitude, growing between 1100 and 3500 m.

24. *N. bellevii* Prain in Journ. As. Soc. Bengal 60, 2: 204 (1891). Ic.: l.c. t. 3.

TYPE. Afghanistan. Kandahar to Kelat-i-Ghilzai, *Bellew* (CAL—n.v.).

AFGHANISTAN. S side Kuh-i Baba, Sirkjui, 2450 m, *Thesiger* 128. Orozgan: Kouh-Garm Ab, *Lindberg* 968.

RANGE: Afghanistan.

The two recent collections are apparently the first re-gatherings of this distinct species since the original collection. With a considerable superficial resemblance to the Spanish endemic *N. tuberosa* L., *N. bellevii* has lower leaves up to 7.9 × 3.4 cm, c. 12 cm long loose spikes, membranous ovate bracts longer than the calyces and c. 11 mm corollas. The most diagnostic single feature is the remarkable horse-shoe shaped areole of the nutlets (fig. 2, 24). Although none of the field notes gives the flower colour, it appears from the dried flowers on the Thesiger specimen that the corolla tube and upper lip are yellow or cream and the labellum is purple-violet.

On the basis of all these features, *N. bellevii* has no close connection with any SW or C Asiatic species of *Nepeta* and should be considered as a most interesting relict species.

25. *N. juncea* Benth. in DC., Prodr. 12: 379 (1848).

TYPE. Afghanistan, *Griffith* (holo—K).

AFGHANISTAN. Kabul: Tang-i-Gharu, 1750 m, *Hedge & Wendelbo* W. 2766; Kabul, *Koelz* 13486; Kabul to Lataband, 1900 m, *Lamond* 1948; Sheikabad inter Kabul et Ghazni, 2300 m, *Rechinger* 17250. Ghazni: NW Ghazni, Qala Nau, 2300 m, *Rechinger* 17811; Bozghalak, prope Shashgao, 24 km NE Ghazni, 2400 m, *Rechinger* 17299.

W PAKISTAN. Quetta: inter Sanjawi et Harnai, 900 m, *Rechinger* 29461; Urak Tal, *Repp*, *Nasir* 28399, *Lace* 4037; between Dulai and Kanak, Chiltan, 1600 m, *Lamond* 1094; inter Kingri et Mekhtar, 1500 m, *Rechinger* 29765, *Lamond* 1407. Waziristan: Barwand, *Duthie* 15642.

RANGE: Afghanistan, W Pakistan.

This is a most variable species whose exact limits are uncertain. Although most of the fairly abundant material gathered in the province of Kabul is uniform, material from Ghazni and Quetta often varies considerably in several respects. For example, the length and shape of the bracts is most variable and often gives the impression that separate taxa could be recognised. However, until intensive study has been made which might show the presence of distinctive local races, it is preferable to recognise only one very variable species.

Male sterile sex forms are apparently frequent in this complex and often have a different facies from the hermaphrodite plants, e.g. the verticils are fewer-flowered and the bracts are shorter and narrower. Flower colour is usually white but ranges between white and lavender.

The species closely allied to *N. juncea* are *N. glomerulosa* Boiss. in Persia, *N. gedrosiaca* Bornm. from Persian Balucistan, *N. xylorhiza* Rech. f. and *N. heterotricha* Rech. f. from Afghanistan. Further studies of a wider scope might show that subspecific status is preferable for them.

26. *N. xylorhiza* Rech. f. in Biol. Skr. 8, 1: 41 (1954) exclud. pl. cabul. Ic.: l.c. fig. 23.

TYPE. Afghanistan. NW: Burchao pass, 2750 m, *Koelz* 14125 (W, E, BPI—n.v.).

AFGHANISTAN. Ghorat: Mollah Allah, 12 km SW Taiwara, 2300 m, *Rechinger* 18980; Kuh-Tscheling-Safed-Daraq, 2800 m, *Rechinger* 19101.

RANGE: Afghanistan.

This species is probably only a local form of *N. juncea* Benth.; the differences between them are no more than given in the specific key. More gatherings from NW and C Afghanistan are needed.

Koelz 13486, cited by *Rechinger* in the original description of *N. xylorhiza*, is *N. juncea* Benth.

27. *N. prainii* Duthie in Ann. Bot. Gard. Calc. 9: 63 (1906). Ic.: l.c. t. 77.

TYPE. W Pakistan. Kurram: Kurram valley, *Harsukh* 15432 (CAL—n.v.). Samana range, NE of Thal, *E. C. Hare* (CAL—n.v.).

AFGHANISTAN. Nuristan: Khash district, *Koelz* 12916; Pashki, 2600 m, *Edelberg* 1316.

W PAKISTAN. Chitral: Golen Gol, *Bowes Lyon* 7; Lutkor river, Shoghot, *Stainton* 2593. Kurram: Kurram valley, *Harsukh* 15433.

RANGE: E Afghanistan, W Pakistan.

It is doubtful if *N. mollis* Benth. and *N. distans* Benth. described from the Kashmir region, can be specifically separated from *N. prainii*. More material of the W Himalayan species is needed before a conclusion can be reached. Both, in addition to *N. prainii*, have been recorded from the Kurram valley (and Swat) but in the meantime I prefer to regard these as misidentifications for *N. prainii*.

The relationship of *N. prainii* with *N. juncea* is apparently fairly close but with the material examined they appear quite distinct species.

28. *N. heterotricha* Rech. f. in Biol. Skr. 8, 1: 32 (1954). Ic.: l.c. fig. 16.

TYPE. Afghanistan. Mazar-i-Sharif: Polat, 2740 m, *Koelz* 13945 (W, E, BPI—n.v.).

AFGHANISTAN. Mazar-i-Sharif: Aq Kupruk, 750 m, *Hedge & Wendelbo* W. 3932; Koh-i-Elburz, Chesma-i-Shafa, 900 m, *Hedge & Wendelbo* W. 3857; inter Aq Kupruk et Chesma-i-Shafa, *Rechinger* 16264. Parvan: Ghorband valley, 2600 m, *Podlech* 12060.

RANGE: N Afghanistan.

Only known from a few gatherings mostly from the Koh-i-Elburz region, *N. heterotricha* is closely related to *N. juncea* Benth. which is only known from the S side of the Hindu Kush. The northern species differs in the smaller leaves, the almost leafless flowering stems, the fewer flowered verticils and the shorter bracts.

29. *N. persica* Boiss., Diagn. 1, 12: 66 (1853).

Several syntypes from S and N Persia (G—n.v.).

AFGHANISTAN. Herat: Herat, 1400 m, *Koeie* 2272; Langer Khil, *Lindberg*

985. Ghazni: in jugo Kotal-e Ketschru, NW Sang-i Masha, 2880 m, *Rechinger* 17526. Ghorat: Parjuman, 1850 m, *Rechinger* 19036.

RANGE: Afghanistan, Iran.

A rock crevice species, closely allied to the Persian *N. kotschyi* and the Sinai-Egyptian *N. septemcrenata*. The cordate, ovate-orbicular leaves and subequal erect calyx teeth are diagnostic features for the species group.

30. *N. micrantha* Bge. in Ledeb., Fl. Alt. 2: 401 (1830). Ic.: Ledeb., Ic. Pl. Fl. Ross. 5: t. 412 (1834).

TYPE. Altai, in montibus Arkaul et Dolenkara, *C. A. Meyer* (LE—n.v.).

AFGHANISTAN. Herat: Badghis, *Aitchison* 467, 1095; Obek, *Lindberg* 1962: 471.

W PAKISTAN. Baluchistan, *Stocks* 1023 (n.v.).

RANGE: Afghanistan, W Pakistan, SW & C Asia.

There are several species very closely related to *N. micrantha* such as *N. meyeri* Benth., *N. pallida* C. Koch and *N. saccharata* Bge. Although they are all treated as separate species in Komarov Fl. URSS, study of their variation throughout their respective ranges is needed to determine their status. The determination of the Afghanistan and W Pakistan plants as *N. micrantha* is therefore provisional.

31. *N. sewerzowii* Rgl. in Acta Hort. Petrop. 6: 360 (1879). Ic.: Trans. Linn. Soc. 2nd ser., 3, 1: t. 41 (1888); Komarov, Fl. URSS 20: t. 14, fig. 1 (1954).

Syn.: *Drepanocaryum sewerzowii* (Rgl.) Pojark. in Komarov, Fl. URSS 20: 228 (1954).

TYPE. Turkestan "in montibus karatavicis Mogol-tau, *Sewerzow* (LE—n.v.); in Kokaniae valle fluvii Sarawschan prope Daschti-kasi et prope Katti-kurgan, *O. Fedtschenko*" (LE—n.v.).

AFGHANISTAN. Herat: Badghis, *Aitchison* 373. Maymana: Darrah Zang near Belcheragh, 1400 m, *Hedge & Wendelbo* W. 3755. Farah: Jija, 900 m, *Koeie* 4058. Mazar-i-Sharif: Aq Kupruk, 750 m, *Hedge & Wendelbo* W. 3941. Bamian: 16 km S Doab, *Rechinger* 16641. Kabul: Kabul, Sher Darwasa, 1800 m, *Hedge & Wendelbo* W. 2905. Ghazni: 40 miles N Ghazni, *Furse* 5694. Badakshan: Faizabad, *Furse* 6232.

W PAKISTAN. Chitral: Drosh, *Stainton* 2270, *Toppin* 149; Mastuj, *Stainton* 2459. Baluchistan, *Stocks*.

RANGE: Afghanistan, W Pakistan, Soviet C Asia.

Pojarkova (l.c.) created a new monotypic genus, *Drepanocaryum*, and a new monotypic subfamily, *Drepanocaryoideae*, to accommodate this species. Her reasons for removing it from *Nepeta* were the 19–20-nerved calyx, the obliquely inflated base of the calyx and the falcate nutlets (fig. 2, 31). Despite these not insubstantial reasons for generic separation, I prefer, because of the many features it has in common with other annuals such as *N. saccharata* Bge. and *N. micrantha* Bge., to leave it in *Nepeta*.

N. sewerzowii is a common plant in Afghanistan, most frequently found growing under, or at the base of, rocks. It varies greatly in size according to habitat.

32. *N. rechingeri* Hedge, sp. nov. (Plate 4).

Species insignis nulli affinis.

Sect. *Micranthae* Boiss.—*Annua*, 10–35 cm alta, simplex vel saepius prope basin ramis arcuatis provisa. *Caules* erecti, quadrangulares, pauci-foliati, glanduloso-tomentosi. *Folia* basalia minuta, petiolata, obovata, subintegra, florendi tempore plerumque jam emarcida. *Folia* caulina 2–3-paria, petiolata, lamina 10–30 mm longa et lata, ovata, basi truncata vel subcordata, obtuse crenata vel subintegra, indumento utrinque pilis eglandulosis et pilis glandulosis brevioribus; nervatura indistincta. *Axis* inflorescentiae simplex vel ramosus, pilis glandulosis et eglandulosis provisus, viscosus. *Inflorescentia* sphaericocapitata, longissime pedunculata, densa et multiflora, 10–15 mm diametro. *Bracteae* late ovatae calyces superantes, virides vel purpureae. *Calyx* 5 mm, tubulosus, ore paulum obliquus, pilis eglandulosis et glandulosis brevioribus capitatis obsitus, intus glaber, dentibus superioribus 1 mm, linearibus acutis, inferioribus 1.5 mm linearibus. *Corolla* ad 11 mm, lilacina, extra albo-puberula, curvata e calyce valde exserta; labium superius in lobos duos fissum; labium inferius lobo mediano rotundato-reniformi, c. 4.5 mm lato, lobis lateralibus ovatis obtusissimis. *Stamina* quam labium superius breviora vel subexserta. *Stylus* bifidus, inclusus. *Nuculae* (fig. 2, 32) oblongae. *Floret* Mai-Jun.

AFGHANISTAN. Bamian: c. 15 km W of Doab in Ajar valley, *Chenopod.-Peganum* soil, 1450 m, 21 v 1962, *Hedge & Wendelbo* W. 3444 (holo—E, iso—BG); Ajar valley, dry barren soil slopes, *Hedge & Wendelbo* W. 4127; Darrah Siakar, 2000 m, *Hedge & Wendelbo* W. 4152; in valle Ajar, *Rechinger* 16636; im Kamardtal westlich von Doab, *Gilli* 3549.

RANGE: Afghanistan.

The characteristic features of this new species are the long pedunculate, densely capitate inflorescences, the broad ovate bracts, the small calyces and large corollas, the glandular indumentum and the annual habit. This combination of characters gives it an isolated position in the genus. Although it has been placed in sect. *Micranthae* on account of its annual habit and the calyx form, there is no obvious close ally for it among the SW Asiatic species. Likewise, among the perennial species, the new species has no obvious kinship although similar in habit and branching to the otherwise unrelated *N. floccosa*.

It is a pleasure to name this distinct species after Prof. K. H. Rechinger of Vienna.

33. *N. pungens* (Bge.) Benth., Lab. Gen. et Sp. 487 (1834).

Syn.: *Ziziphora pungens* Bge. in Ledeb., Fl. Alt. 1: 23 (1829).

TYPE. Altai, *Bunge*, ann. 1833.

AFGHANISTAN. Herat: Badghis, *Aitchison* 472.

RANGE: Afghanistan, Iran.

The stiff recurved bracts are the most diagnostic feature of this species. Although only known from one collection in Afghanistan, further investigations will probably show that it is scattered throughout at least the west and north-west of the country.

Pojarkova (Fl. URSS 20: 429-435, 1954) recognises, in addition to *N. pungens*, two segregates of this species viz. *N. microcephala* Pojark. and *N. fedtschenkoi* Pojark. She records both the latter two, but not *N. pungens*, from Afghanistan. No material has been seen of the two species of Pojarkova and consequently, despite the key in the Fl. URSS, their relationship with the cited specimen is uncertain.

34. *N. satureioides* Boiss., Diagn. 1, 5: 24 (1844).

TYPE: Persia, prope Esfahan, *Aucher* 5147 (holo—G, iso—K).

AFGHANISTAN. Herat: N of Herat, *Koeie* 4057; Obek, *Lindberg* 70; Harirud, *Aitchison* 413. Ghorat: inter Daulat Yar et Qala Qansi (Tschaktscharan), 2200 m, *Rechinger* 18830. Bamian: N of Paimuri gorge, 2600 m, *Hedge & Wendelbo* W. 4629; Koh-i-Baba near Bamian, 2610 m, *Gilli* 3548; Doab, *Volk* 2686. Kabul: Koh-i-Asamai, *Lamond* 2116. Nuristan: Keran to Sharan, 3300 m, *Frey* 160.

W PAKISTAN. Quetta: Urak, *R. R. Stewart* s.n.

RANGE: Afghanistan, W Pakistan, Soviet C Asia, Iran.

Without any close allies in the genus, *N. satureioides* can be recognised at a glance by the stiffly erect habit and the linear recurved leaves subtending the widely separated verticils.

35. *N. daenensis* Boiss., Diagn. 1, 7: 53 (1846).

TYPE. Persia: Kuh Daena, *Kotschy* 915b (holo—G, iso—E, LE—n.v., K).

AFGHANISTAN. Paktia: Hariab valley, *Collett* 14. Ghazni: distr. Behzud (Diwal Kol), Dahan-e Abdila, 35 km E Sar-i Chashma, 2800 m, *Rechinger* 17994. Kabul: Unai, Kuh-i Qhalandaran, 3600 m, *Hedge & Wendelbo* W. 4503. Parvan: E side Shibar pass, 2600 m, *Hedge & Wendelbo* W. 3316. Bamian: Bulola to Shibar, 2700 m, *Rechinger* 16807; Band-i Amir, *Rechinger* 18221b. Badakshan: Wakhan, Quazi-Deh, 2950 m, *Roemer* 118.

W PAKISTAN. Chitral: Serin, *Bowes Lyon* 790.

RANGE: Afghanistan, W Pakistan, Pamir-Alai, Iran.

N. daenensis is allied to *N. bracteata* but can be distinguished by the narrower, oblong-linear leaves and the linear-lanceolate bracts. As is the case in *N. bracteata* there is great variation in the leaf shape and in some usually dwarf specimens the leaves are linear and entire. The flower colour varies between whitish and deep violet; often the whole plant is suffused with purple.

36. *N. bracteata* Benth. in DC., Prodr. 12: 395 (1848). Ic.: Komarov, Fl. URSS 20: t. 25, fig. 2 (1954).

Syn.: *Zataria* ? *humilis* Benth. in DC., Prodr. 12: 183 (1848).

TYPE. Persia, Isfahan, *Aucher* 5136 (G, K).

AFGHANISTAN. Herat: Chisht, 1700 m, *Koeie* 3676; Jija, 900 m, *Koeie* 4060. Ghazni: in jugo Sardalu W Qarabagh, 2400 m, *Rechinger* 17320. Kandahar/Ghazni: between Kandahar and Ghazni, 1400 m, *Furse* 5608. Kabul: Koh-i Asamai, *Lamond* 2115; Paghman, *Rechinger* 17138. Paktia: in jugo Shutargarden (Latakor), 3300 m, *Rechinger* 32353. Bamian: inter Bamian et Band-i Amir, *Rechinger* 18123; between Kotal-e-Sevali and Kotal-e-Shahtu, 3000 m, *Hedge & Wendelbo* W. 4861; Doab, 1440 m, *Hedge & Wendelbo* W. 3374. Parvan: Panjshir valley, Mukeni, 2400 m, *Hedge & Wendelbo* W. 5303a.

W PAKISTAN. Quetta: Quetta to Chaman, Khojak pass above Shelabagh, *Lamond* 1069; Shelabagh, *Lace* 3331; Quetta, *Dick Peddie* 228; Maslakh range, Sultan, *R. R. Stewart* 28038.

RANGE: Afghanistan, W Pakistan, Pamir-Alai, Iran.

A very common species in Afghanistan, *N. bracteata* varies greatly in several characters. The corollas may be yellowish-white, white with a lilac hood or bluish violet; the indumentum may be sparse or dense adpressed; the leaf margins may be entire or coarsely toothed. The relative abundance of herbarium material shows intergradation among the variants and there are no apparent reasons for subdividing the species although it does show a tendency to form almost distinguishable local populations. For example, the plants from the Ajar valley, west of Doab, are fairly uniform in indumentum, the entire leaf margins and the yellowish flowers.

The Persian species *N. globifera* Bge. is very closely related to *N. bracteata* and doubtfully different from it.

37. *N. raphanorrhiza* Benth., Lab. Gen. et Sp. 734 (1835).

TYPE. Kashmir: Baramulla to Setoune, Jhelum valley, 7 Mai, *Jacquemont* 351 (K).

AFGHANISTAN. Paktia: Khost, Gabr valley S of Chakmani, *Neubauer* s.n. Nuristan: Daulatash, *Koelz* 11652; Vama, *Edelberg* 362; in *Cedrus deodora* wood, 2100 m, *Gilli* 3521.

W PAKISTAN. Swat: Jabba valley, E of Kolaila, 2000 m, *Lamond* 1770. Chitral: Ziarat, Lowarai pass, 2450 m, *Stainton* 2557. Kurram: Peiwar Kotal, *Harsukh* 14833; Badishkhel to Alikhel, *Aitchison* 55, 588.

RANGE: E Afghanistan, W Pakistan, Kashmir.

Although generally characterised by the thick tuberous rootstock (up to 15 mm in diameter), specimens without roots can usually be recognised on the characters of the small leaves, the compact inflorescence heads and the clearly exerted corolla tubes. In the type and density of the indumentum and in the size of the leaves, *N. raphanorrhiza* is most variable.

38. *N. spathulifera* Benth. in DC., Prodr. 12: 380 (1848). Ic.: Bot. Tidsskr. 28: fig. 3 (1908) (sub. *N. fallax* Briq.).

Syn.: *N. reniformis* Briq. in Bot. Tidsskr. 28: 236 (1908).

N. fallax Briq., l.c. 237.

TYPE. Afghanistan, without exact locality, *Griffith* (holo—K).

AFGHANISTAN. Ghazni: Okak, NE altoplanitie Dasht-e Nawar (Naour), 3000 m, *Rechinger* 17694. Kabul: Paghman, *Neubauer* 4651; E of Augardan pass between Panjao and Bisut, 3150 m, *Hedge & Wendelbo* W. 5011. Parvan: Ghorband, 2250 m, *Neubauer* 4160. Bamian: W side of Shibar pass, 2400 m, *Hedge & Wendelbo* W. 4191; Band-e-Amir, 2900 m, *Hedge & Wendelbo* W. 4770. Badakshan: Panjshir valley, Auz Anjuman, 3400 m, *Hedge & Wendelbo* W. 5465; Wakhan, Mt. Noshah, *Yosii* 658, 680 (n.v.); Zebak, *Giles* 184.

RANGE: Afghanistan, Pamir-Alai.

N. spathulifera is a distinct annual recognised by the petiolate floral leaves and the reniform basal leaves; it is a fairly uniform species but varies in the density of the indumentum on leaves and inflorescences. In Afghanistan it grows up to 3400 m; in Flora URSS, its uppermost limit in the Pamir-Alai is given as 3800 m.

Although the type specimen is quite adequate, it is not possible to be sure where Griffith collected it. One of the labels on the type sheet bears the name Akrobat (near Bamian) and this could be the type locality although Griffith's Journal makes no mention of his having collected a *Nepeta* there.

39. *N. eriosphaera* Rech. f. & Koeie in Biol. Skr. 8, 1: 31 (1954). Ic.: l.c. fig. 14b, 15.

TYPE. Afghanistan. Farah: Jija, 900 m, *Koeie* 3599 (holo—W, iso—C).

AFGHANISTAN. Herat/Farah: Shin Dand to Farah, 1300 m, *Furse* 5514. Kandahar: Pirzada, *Koeie* 3599; Tirine, *Lindberg* 814.

W PAKISTAN. Baluchistan: Saffar, *Uddin* 100; Gulungoor, *Stocks* 987.

RANGE: W and SW Afghanistan, W Pakistan.

Characterised by the long white indumentum on the verticils and the long slender calyx teeth, *N. eriosphaera* is related to the Persian *N. eremophila* Hausskn. & Bornm. and the Afghan *N. spathulifera*.

40. *N. korshinskyi* Lipsky in Acta Hort. Petrop. 23: 222 (1904). Ic.: Komarov, Fl. URSS 20: t. 28, fig. 1 (1954).

Syn.: *Kudrjaschevia korshinskyi* (Lipsky) Pojark. in Not. Syst. Leningrad 15: 276 (1953).

TYPE. Turkestan, Darwas, *Korshinsky* and Shugnan, *Alexeenko* (LE—n.v.).

AFGHANISTAN. Badakshan: W Wakhan, Urghend valley, 3900–4200 m, *Roemer* 236.

RANGE: NE Afghanistan, Pamir-Alai.

This species is recognised by the few-flowered verticils, the 2-staminate corollas and the rigid, serrate leaves with prominent lateral veins. It is very closely allied to *Kudrjaschevia allotricha* Pojark. (l.c. 277). Kitamura records the latter species from Wakhan (Additional Reports, Kyoto 133: 1966) and this may well refer to the plant that I have named *N. korshinskyi*. Pojarkova on the

character of the 2-staminate corollas put these two species into the genus *Kudrjaschevia* and in a supplement to her paper (Not. Syst. 15: 281, 1953) added in two annuals *K. jacubi* (Lipsky) Pojark. and *K. nadinae* (Lipsky) Pojark.

SPECIES WRONGLY RECORDED FROM OUR AREA OR DOUBTFULLY PRESENT

A. *N. lagopsis* Benth. in DC., Prodr. 12: 397 (1848).

TYPE. W Pakistan: Beebeeanee, *Griffith* 212 (holo—K).

This species is characterised by the woody base, the procumbent-ascending habit, the short petiolate, ovate leaves and the capitate, lanate inflorescence with bracts exceeding the calyx. Although Benthham gave the type locality as 'in regno Cabulico' and Boissier (Fl. Orient. 4: 640, 1879) did likewise, this is an error of geography. Beebeeanee (Bibi Nani) is in W Pakistan between Dadhar and Mach, S of the Bolan pass.

B. *N. ciliaris* Benth. in Wall., Pl. As. Rar. 1: 64 (1830).

TYPE. Nepal, *Wallich* 2082.

The record of this species from Afghanistan was based on a Griffith gathering from Nuristan (Rechinger in Biol. Skr. 8, 1: 28, 1954). This specimen is included under the new species *N. griffithii* Hedge (see page 114).

C. *N. graciliflora* Benth. in Wall., Pl. As. Rar. 1: 65 (1830).

TYPE. Nepal, Hurdwar, *Wallich* 2123.

There is a specimen at the Naturhistorisches Museum, Vienna which may be referable to this species. It is a cultivated specimen grown apparently from seed collected in Chitral (Yarkhum, *Kerstan*). The record requires confirmation as the known range of *N. graciliflora* is considerably to the east of Chitral.

OCIMUM L., Sp. Plant. 597 (1753); Gen. Plant. ed. 5: 259 (1754).

1. *O. basilicum* L., Sp. Plant. 597 (1753).

TYPE. 'Hab. in India'.

AFGHANISTAN. Badakshan: Jurm, 2133 m, *Koelz* 12912.

RANGE: Afghanistan, India, Malaysia, China, Formosa.

A commonly cultivated plant in much of the subtropical regions of the world. Its exact wild distribution is therefore uncertain.

ORIGANUM L., Sp. Plant. 588 (1753); Gen. Plant. ed. 5: 256 (1754).

1. *O. vulgare* L., Sp. Plant. 590 (1753).

- a. Cymes dense, \pm capitate; bracts 4-7 mm, broad ovate to obovate, \pm obtuse var. *vulgare*
- + Cymes \pm lax, often elongate; bracts 1.5-5 mm, lanceolate to ovate, acute var. *glaucum* (Rech. f. & Edelb.) Hedge & Lamond
- var. *vulgare*

TYPE. "Hab. in Europae, Canadae rupestribus" (LINN.—photo!).

W PAKISTAN. Swat: Kalam, c. 2200 m, *Rechinger* 19465; Ushu c. 2400 m, *Rechinger* 19484.

RANGE: Temperate regions of the northern hemisphere.

var. *glaucum* (Rech. f. & Edelb.) Hedge & Lamond **comb. et stat. nov.** l.c.: Biol. Skr. 8, 1: fig. 46, (1954) (sub. *O. glaucum*).

Syn.: *O. glaucum* Rech. f. & Edelb. in Biol. Skr. 8, 1: 76 (1954).

O. glaucum var. *laxius* Rech. f. & Edelb. l.c.

TYPE. Afghanistan. Nuristan: Chetras, 2000 m, *Edelberg* 1198 (W, C—n.v.).

AFGHANISTAN. Badakshan: Faizabad, *Neubauer*, 1900 m, *Edelberg* 1393; Khash district, 2450 m, *Koelz* 12926. Qataghan: Salang Pass (N), 3000 m, *Neubauer* 5004, *Rechinger* 31629; Andarab-Tal, Darrah-i-Kasan, NE of Deh Salah, 2200 m, *Podlech* 11692; Khost-o-Fereng, 2100 m, *Podlech* 11881. Parvan: Salang Pass (S), *Neubauer* 4404, 2000 m, *Lamond* 2065, *Rechinger* 31325. Nangarhar: Darim, 1900–2400 m, *Neubauer* 988.

W PAKISTAN. Chitral: Madalasht, NE of Drosh, 2450 m, *Stainton* 3148, 2750 m, *Bowes Lyon* 150. Swat: *Weatherhead* 44. Malakand: Malakand, 800 m, *Rechinger* 30454, *Lamond* 1654.

RANGE: NE Afghanistan, NW Pakistan.

Study of *O. vulgare* in Europe, SW Asia, C Asia and the Himalyas to China showed that several distinct infraspecific taxa are recognisable within this range. For example, subsp. *prismaticum* Gaud. from Europe has been separated on the elongated inflorescence and Boissier's var. *viride*, from Greece eastwards to Persia and Transcaspia, on smaller bracts. A detailed study is needed to clarify the relationship between these two taxa, var. *glaucum* from our area and plants from the remainder of the species range. Also within the complex lie *O. tyttanthum* Gontsch. (Delect. Sem. Inst. Bot. Sect. Tadschik. Acad. Sc. URSS: 12, 1924) from the Tian Shan–Pamir–Alai region and its close relative *O. kopetdaghensis* Boriss. (Not. Syst. Leningrad 16: 280, 1954). Both were also separated from *O. vulgare* on details of inflorescence, bracts and corolla size but more material is needed to assess their status.

In the specimens examined, sex forms are frequent and account for differences in calyx and corolla size. Out of the twenty six specimens examined, nine were male sterile. One of them was the holotype of var. *laxius* (*Edelberg* 1393). Isotype material at Edinburgh however is hermaphrodite and several other gatherings exhibit both the sex form and hermaphrodite specimens (e.g. *Neubauer* 988, 4404 and *Podlech* 11881). *Bowes Lyon* 150 has male sterile and hermaphrodite flowers within the same inflorescence, a very unusual occurrence in the Labiatae.

The bracts in the Afghan specimens are ciliate on the margins but otherwise glabrous and \pm equal the calyx; the Chitral plants have glabrous bracts, slightly exceeding the calyx, while those from Swat have usually sparsely pubescent bracts, either equalling or longer than the calyx. Flower colour may vary from white to mauve or rose.

OTHER RECORDS

O. majorana L. is a commonly cultivated plant and is recorded as an alien in Swat. A Giles specimen has been seen from his Gilgit expedition.

O. laxiflorum Royle recorded in Biol. Skr. 8, 1: 76 (1954), (Neubauer 948) is a misidentification of *Zataria multiflora* Boiss.

OTOSTEGIA Benth., Lab. Gen. et Sp. 601 (1834).

Lit.: 1939. S. N. Kudrjaschew, Frag. Monog. roda *Otostegia*. Tr. Bot. Sekt. Kom-Ta Nauk pri. SNK Uzbek SSR.

Study of the accompanying map shows that although *Otostegia* has not been recorded from Afghanistan its occurrence close to the border in the neighbouring countries suggests that future collecting will reveal its presence.

Species of section *Chartocalyx*, found in the Pamir-Alai-Tian Shan region may be expected in Wakhan and Upper Badakshan. *O. limbata* from NW Pakistan and *O. aucheri* stretching from SE Persia to the eastern limits of Baluchistan should be sought from the east and south of the country respectively. These two species are dealt with below.

- | | |
|---|--------------------------------------|
| 1. Leaf apex spiny; corolla white | 1. <i>O. aucheri</i> Boiss. |
| + Leaf apex not spiny; corolla yellow | 2. <i>O. limbata</i> (Benth.) Boiss. |

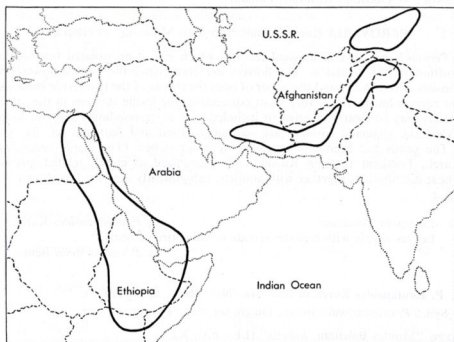


FIG. 3. Distribution of the genus *Otostegia* Benth. The main concentration of species is in the Egypt-Ethiopia region where c. 12 are recorded. Three are known from the S Iran-Baluchistan area and 1 from NW Pakistan. In the Pamir-Alai region the genus is represented by section *Chartocalyx* with 4 species.

1. *O. aucheri* Boiss., Diagn. ser. 1, 5: 40 (1844). Ic.: Jaub. and Spach, Ill. Fl. Or. t. 382 (1850-53).

TYPE. "Hab. in Persia australi" *Aucher* 5122 (G.—n.v.).

W PAKISTAN. Baluchistan. Makran: Hoshab to Panjgur, 600 m, *Rechinger* 28053, *Lamond* 539; Awaran to Hoshab, *Rechinger* 27685, *Lamond* 354. Kalat: Panjgur to Surab, 1350 m, *Rechinger* 28288; Khuzdar, *Stocks* 713, *Rechinger* 27407. Quetta: Anambar (Loralai to Mekhtar), *Lace* 3666; Duki to Gumbaz, 900-1000 m, *Rechinger* 29620, *Lamond* 1341.

RANGE: W Pakistan (Baluchistan), SE Iran.

2. *O. limbata* (Benth.) Boiss. in Fl. Orient 4: 778 (1879).

Syn.: *Ballota limbata* Benth., Lab. Gen. et Sp. 743 (1835).

TYPE. "Hab. in Indiae Orientalis septentrionalis montibus: in glareosis lapidosis editoribus juxta Pindaden Khan" 7 April, *Jacquemont* 97 (P.—n.v., K)

W PAKISTAN. Chitral: Jambatai, 1500-1800 m, *Harriss* 16523. Swat: Barikot to Mingora, 700-900 m, *Rechinger* 30483. Peshawar: Kund, between Peshawar and Attock, *Rechinger* 30383, *Lamond* 1635; Khyber hills, *Deane*. Kohat: Cherat, SE of Peshawar, 700-950 m, *Rechinger* 30258. Kurram: Thal to Parachinar, *Rechinger* 30882.

RANGE: W Pakistan, Kashmir, Punjab.

PEROVSKIA Karel. in Bull. Soc. Nat. Mosc. 14: 15 (1841).

Perovskia has several unusual features which give it an isolated taxonomic position in the Labiatae. The flowers are resupinate, the corolla lower lip consists of four lobes and the upper of one; the thecae of the two fertile stamens are narrow linear with a very short connective; the fertile stamens in the same species may be clearly exerted or included with correspondingly short or long styles; the stigmatic surfaces are unusually broad and flattened (cf. fig. 5).

The genus has been monographed by Kudrjaschew (The genus *Perovskia* Karel., Tashkent 1936, in Russian). He recognised six closely-related species whose distribution, together with another, subsequently described, is shown on fig. 4.

- | | |
|--|------------------------------------|
| 1. Leaves bipinnatisect | 1. <i>P. abrotanoides</i> Karel. |
| + Leaves simple with crenate, serrate or subentire margins | 2. <i>P. atriplicifolia</i> Benth. |

1. *P. abrotanoides* Karel. in Bull. Soc. Nat. Mosc. 14: 15 (1841).

Syn.: *P. artemisioides* Boiss., Diagn. ser. 2, 4: 15 (1859).

TYPE. "Montes Balchani, *Karelin*" (LE—n.v., K).

AFGHANISTAN. Bamian: 16 km S of Doab, *Rechinger* 16650; Surkhab valley S of Doab, *Podlech* 12602; 20 km S of Doab, 1500 m, *Hedge & Wendelbo* W. 4134. N: Binimang, *Koelz* 13883; Eschpuschta, 1500 m, *Gilli* 3480.

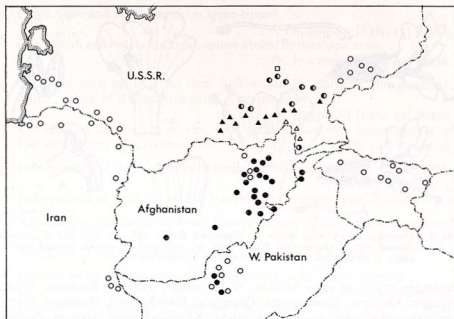


FIG. 4. Distribution of the species of *Perovskia* Kar. The records from the USSR have been taken from Kudrjaschew's monograph. ○ *P. abrotanoides*; ● *P. angustifolia*; ▲ *P. scrophulariifolia*; △ *P. virgata*; ● *P. linczevskii*; ● *P. atriplicifolia*; □ *P. kudrjaschevii*.

W PAKISTAN. Quetta: Zhob valley, *Peters*; Loralai to Harnai, Torkhan Pass, 1900 m, *Lamond* 1240; Ziarat, *Lace* 4009; Urak, *Crookshank* 105; near Quetta, *Popov* 275. Baluchistan, *Stocks* 1112 (type of *P. artemisioides* Boiss.).

RANGE: Afghanistan, W Pakistan, Kashmir, Tian Shan, Kopet Dagh, NE Iran, Tibet.

The most widely distributed species of the genus, *P. abrotanoides* is a fairly constant taxon. The leaves are generally bipinnatisect but in some of the specimens they are scarcely so. Although there is an almost continuous range in leaf shapes from entire margins to simply pinnate there is a break in the variation range between the simply pinnate and the bipinnate leaf. Other than the leaf character that separates *P. abrotanoides* from the other species, there are no other satisfactory distinguishing features. In calyx and corolla characters, all the species are most similar.

2. *P. atriplicifolia* Benth. in DC., Prodr. 12: 260 (1848). Ic.: Bot. Mag. t. 8441 (1912).

TYPE. Afghanistan, *Griffith* (K).

AFGHANISTAN. Kabul: Paghman, *Koelz* 12084, *Neubauer* 3229; Sher Darwasa, 1800 m, *Hedge & Wendelbo* W. 4296; Kabul to Lataband, 1900 m, *Lamond* 1952; Tang-i-Gharu, 1740 m, *Gilli* 3481, *Neubauer* 3163; Sheikhabad, inter Kabul et Ghazni, 2300 m, *Rechinger* 17267; Kabul to Charikar, 1950 m, *Podlech* 11635. Paktia: SE Gardez on road to Khost, *Rechinger* 32087. Ghorat: Parjuman, 1850 m, *Rechinger* 19055. Ghazni: inter Qarabagh et Sang-i Masha, 2000 m,

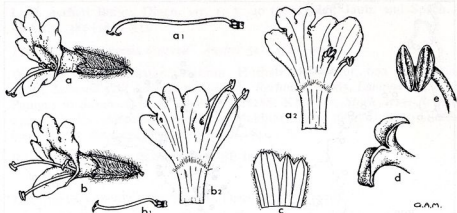


FIG. 5. *Perovskia atriplicifolia* Benth. a, long-styled flower with, a^1 , style and a^2 , corolla opened out. b, short-styled flower with, b^1 , style and b^2 , corolla opened out. c, calyx. d, stylar arms e, anther. a, b and c x 3, d and e x 12.

Rechinger 17376; in jugo Sardalu, W Qarabagh, 2300 m, *Rechinger* 17346. Orozgan: Orozgan, *Lindberg* 928. Qataghan: Pol-i-Khomri, *Rechinger* 16507; Andarab valley, 1600 m, *Podlech* 11674; Khost-o-Fereng, 2100 m, *Podlech* 12004.

W PAKISTAN. Kurram: Kurram valley, R. R. *Stewart* 28047, *Aitchison* 644. Quetta: Luk pass, between Quetta and Mastung, *Jafri & Akhar* 2015. Chitral: Drosh, *Stainton* 3180, *Toppin* 399, *Harriss* 16536; Chitral, *Stainton* 2537.

RANGE: Afghanistan, W Pakistan.

This species is represented by numerous gatherings from Afghanistan. It is variable in leaf shape, density of indumentum and degree of branching. Some of the facets of its variation approach very closely some of the species recognised by Kudralschew. For example, using his key, some of the Afghan gatherings run down to *P. angustifolia* Kudr. and *P. scrophulariifolia* Bge. Little C Asiatic material has been available for study but it seems that at least these two species come within the range of variation that occurs in the Afghanistan material of *P. atriplicifolia* of which apparently Kudralschew saw no authentic gatherings. In Afghanistan, several varieties could be recognized based on leaf shape and indumentum characters but in the meantime until a comprehensive review has been undertaken, I prefer not to recognise subspecific taxa.

The calyx is usually densely covered with long white eglandular hairs but in *Rechinger* 19055 and *Podlech* 12626 (Qataghan. Farkhar) the calyx indumentum consists only of stellate hairs.

PHLOMIS L., Sp. Plant. 584 (1753); Gen. Plant. ed. 5: 255 (1754)

- | | |
|--|---|
| 1. Lower leaves broad-ovate, deeply cordate at base | 2 |
| + Lower leaves narrow-ovate to linear-elliptic, cuneate, rounded or truncate at base | 5 |
| 2. Stem 4-angled with usually simple hairs or glabrous | 3 |
| + Stem terete with stellate hairs or glabrous | 4 |

- 3. Calyx teeth and bracts rigid, \pm spine-tipped
6. *Ph. setigera* [Falc. ex] Benth.
- + Calyx teeth and bracts not rigid, spines absent or inconspicuous
7. *Ph. bracteosa* [Royle ex] Benth.
- 4. Branched herb up to 2 m; stem hollow usually glabrous and glaucous; upper surface of leaf scabrid with \pm simple hairs
8. *Ph. spectabilis* [Falc. ex] Benth.
- + Unbranched herb up to 60 cm; stem solid, tomentose; upper surface of leaf softly hairy with stellate hairs
9. *Ph. canescens* Rgl.
- 5. Inflorescence of \pm contiguous verticils; leaves linear-oblong, 3-nerved
2. *Ph. trineura* Rech. f.
- + Inflorescence of distinct verticils; leaves ovate or elliptic, many-nerved 6
- 6. Verticils 5-9, few (4-6)-flowered; flowers yellow, occasionally brownish-red
1. *Ph. bucharica* Rgl.
- + Verticils 1-4, many-flowered; flowers white, pink or purple 7
- 7. Flowers white; bracts with stiff stellate hairs, rays clearly unequal
5. *Ph. cancellata* Bge.
- + Flowers pink or purple; bracts with soft stellate hairs, rays of \pm equal length 8
- 8. Subshrub; leaves all similar, attenuate into a short (up to 1.5 cm) petiole or \pm sessile
4. *Ph. stewartii* Hook. f.
- + Herb; basal leaves long (4-16 cm) petiolate, upper shortly so, all \pm truncate and often uneven at base
3. *Ph. cashmeriana* [Royle ex] Benth.

1. *Ph. bucharica* E. Regel in Acta Hort. Petrop. 9, 2: 579 (1886).

Several syntypes from Tadzik SSR: region of upper Amu Darya and tributaries, 700-2000 m, *A. Regel* (LE—n.v., E, K).

AFGHANISTAN. Mazar-i-Sharif: between Samangan and Mirza Atbili Pass, SE of Samangan, 1250 m, *Hedge & Wendelbo* W. 4007, W. 4008. Qataghan: Qunduz, 450 m, *Rechinger* 16096; Surkhab river, S of Ailabad, *Podlech* 11345; Paigah Kotal, Haibak to Pul-i-Khumri, 1500 m, *Rechinger* 16445 a, b. Badakshan: Warduj valley, 100 km W of Faizabad, 900 m, *Furse* 6467. ?; Rustak, 1220 m, *Koelz* 13124.

RANGE: N Afghanistan, Turcomania.

The *Koelz* specimen cited above is wrongly recorded in Biologiske Skrifter 8, 1: 56 (1954) as *Ph. thapsoides* Bge. This purple-flowered species from the Pamir-Alai region has not yet been found in Afghanistan; it differs from *Ph. bucharica* in the smaller ovate leaves and very short calyx teeth.

Kitamura (Fl. Afghanistan, 343, 1960) records *Ph. olgae* E. Regel from between Pul-i-Khumri and Haibak and from Qunduz. Without having seen the specimens the localities suggest that they have been misidentified and the plants are, in fact, *Ph. bucharica*. *Ph. olgae* from the Pamir-Alai is a purple-flowered species with broad ovate leaves, often cordate at the base and very long, often simple bracts.

Ph. bucharica is quite a characteristic plant of some parts of N Afghanistan forming bushy clumps amongst steppe vegetation.

In flower colour it varies from yellow to brownish-red even within the same population (cf. *Hedge & Wendelbo* W. 4007 and 4008 and *Rechinger* 16445 a and b) but there is no discernible morphological difference between them.

2. *Ph. trineura* Rech. f. in Biol. Skr. 8, 1: 56 (1954). Ic.: l.c. fig. 33.

TYPE. Afghanistan. Mazar-i-Sharif: Akupruk, 2438 m, c. 2 ft. high, flowers magenta, 11 ix 1939, *Koelz* 13965 (holo-W, iso-BPI n.v.).

RANGE: N Afghanistan.

This distinct late-flowering species is only known from the type locality. It apparently occupies a fairly isolated position in the genus although the white-flowered *Ph. chorassanica* Bge. from NE Iran is probably, from its description, the closest ally of *Ph. trineura*. In both species, the verticils on the flowering stems are almost contiguous and bear flowers from ground level.

3. *Ph. cashmeriana* [Royle ex] Benth. in Hook., Bot. Misc. 3: 382 (1833). Ic.: Royle, Ill. Bot. Himal. 303, t. 75a (1836); Bot. Reg. 30, t. 22 (1844); Biol. Skr. 8, 1: fig. 32, (1954) (sub *Ph. dichroa*).

Syn.: *Ph. dichroa* Rech. f. in Biol. Skr. 8, 1: 54 (1954).

TYPE. India: "Cashmere" Royle.

AFGHANISTAN. NE: Khash district, 2438–3048 m, *Koelz* 12918 (type of *Ph. dichroa*), *Koelz* 13000. Badakshan: Faizabad to the Amu Darya, *Gilli* 3613. Qataghan: Khost-o-Fereng, 2700 m, *Podlech* 11784; Andarab Valley, Darrah-i-Kasan, NE Deh-Salah, 2400 m, *Podlech* 11709; Salang Pass, N side, 1100–2500 m, *Furse* 6616, *Rechinger* 31728, *Podlech* 11562. Nangarhar: Ashpei, 2300 m, *Edelberg* 1665. Parvan: Salang Pass, S side, 2250–3000 m, *Lamond* 2070, *Podlech* 12231, *Rechinger* 31326; Bagram, Nedjerai Valley, 3000 m, *Neubauer* 221. Paktia: Ali Khel and Peiwar Kotal, *Aitchison* 565, *Lamond* 2481, *Rechinger* 32261.

W PAKISTAN. Chitral: Bashgalian, SW of Chitral, 2438 m, *Stainton* 2701; Broz, *Harriss* 16482; Drosch, *Toppin* 353.

RANGE: Afghanistan, NW Pakistan, Kashmir, Turcomania.

There is a considerable range of variation within the cited specimens. Between those from the SE of the range which are erect, unbranched plants with a dense, floccose indumentum on the stem (which is however deciduous and easily rubbed off) and the shorter, branched, less densely tomentose specimens from N Afghanistan is found a complete range of intermediate forms. Two separate sheets of *Stainton* 2701 show branched and unbranched plants and specimens from the Salang area have both densely tomentose and almost glabrous stems.

Ph. dichroa, described from specimens without basal parts, cannot be maintained as a separate species when the complete range of variation in *Ph. cashmeriana* is seen. Another probable synonym is *Ph. fruticetorum* Gontsch. (Izv. Tadz. Bazy Bot. 2: 186, 1936—syn. *Ph. salicifolia* E. Rgl. var. *intermedia*

E. Rgl.). One A. Regel specimen of this from the upper reaches of the Amu Darya has been examined and is indistinguishable from the N Afghan plants. The characters given by Knorring in his key to the Soviet species (Komarov, Fl. URSS 21: 59, 1954) to distinguish *Ph. fruticetorum* and several other apparently closely allied species are most unsatisfactory, at least when working with dried material.

4. *Ph. stewartii* Hook. f., Fl. Brit. India 4: 692 (1885).

TYPE. W Pakistan. Beyond the Indus, on the Suliman and Salt ranges, 2500–4500 ft, *Stewart, Talbot* (K).

W PAKISTAN. S Waziristan: Wana, 1500 m, *Lowndes* 660, *Duthie* 15677. Dera Ismail Khan: Sulaiman Range, 60–80 km E of Fort Sandeman, *Rechinger* 29934, 30134, *Lamond* 1493. Dera Ghazi Khan: Sulaiman Range, Fort Munro, 16–1800 m, *Rechinger* 29754, *Lamond* 1395. Quetta: Gumbaz to Barkhan, 1000 m, *Lamond* 1375; *Torkhan, Rechinger* 29450; Ziarat to Sanjawi, *Lace* 72, *Rechinger* 29400, *Lamond* 1222. Baluchistan: Kalat; Mastung, *Fairservis* 1.

RANGE: W Pakistan.

This is a dwarf shrub with dusky-pink flowers growing on dry stony ground and a common plant within its rather restricted area.

Although not yet found in Afghanistan the presence of *Ph. stewartii* in Waziristan fairly close to the Afghan frontier indicates that with further collecting it will be found in the SE of the country.

The indumentum on stem and leaves often turns to a distinctive yellowish colour on herbarium sheets.

5. *Ph. cancellata* Bge., in Mem. Acad. Sc. Petersb. 7 ser., 21, 1: 76 (1873). [Lab. Pers.]. Ic.: Komarov, Fl. URSS, 21: t. 4 (1954).

TYPE. NE Persia: 'in rupestribus montium ad occidentem ab urbe Schahrud, *Bunge & Bienenr*' (P?—n.v. LE?—n.v.).

IRAN. Gorgan: mountains S of Shah Pasan by pass to Shahrud, 2133 m, *Furse & Sygne* 514. Khorasan: Bezd, 1219 m, *Aitchison* 656 (wrongly determined as *Ph. herba-venti* L. and recorded as such in Trans. Linn. Soc. Bot. 3, 1: 98, 1888).

AFGHANISTAN. Herat: Ardewan, 1500 m, *Koeie* 2249.

RANGE: NW Afghanistan, Turcomania, NE Iran, Transcaucasus (?).

The record of this species in Fl. URSS (21: 84, 1954) from Ordubad in the S Transcaucasus requires confirmation.

6. *Ph. setigera* [Falc. ex] Benth. in DC., Prodr. 12: 543 (1848).

TYPE. "In Bhudrinath Indiae Or.," *Falconer* (K).

W PAKISTAN. Chitral: Mirza, 2280 m, *Harriss* 16479.

RANGE: W Pakistan, Himalayas.

Very closely related to the following species and possibly not specifically distinct. *Harsukh* 15448 and 15447 from the Kurram Valley originally determined as "*Ph. setigera* var.," are intermediate between *Ph. setigera* and *Ph. bracteosa*.

7. *Ph. bracteosa* [Royle ex] Benth. in Hook. Bot. Misc. 3: 383 (1833).

TYPE. India. Simla/Tehri Garhwal: Choor mountain and Kedarkonta, Royle (K).

AFGHANISTAN. Nangarhar: Kamdesh, 2800 m, Gilli 3614; Shtive, 2600 m, Edelberg 1290.

W PAKISTAN. Chitral: Drosh (Beorai), 3656 m, Bowes Lyon 191. Kurram: Shendtoi, 2438 m, Aitchison 777.

RANGE: E Afghanistan, NW Pakistan and throughout the Himalayas to China.

8. *Ph. spectabilis* [Falc. ex] Benth. in DC., Prodr. 12: 542 (1848). Ic.: Bot. Mag. t. 8870 (1920).

TYPE. India "in valle Cachemiriana," Falconer (K) Jacquemont (K).

AFGHANISTAN. Gardez: mountains E of Altimur Pass, 2800 m, Rechner 32001, Lamond 2411; Sata Kandao Pass, Gardez to Khost, 2900 m, Rechner 32110. Khost: SW of Sata Kandao, 2800-2200 m, Rechner 32132. Paktia: Pewar Kotal, 2600 m, Collett 106.

W PAKISTAN. Chitral: Mirza to Dir, 1980 m, Harriss 16481; Singarh, Harsukh 20623. Quetta: Ziarat, 2000-2500 m, Lace 3875, Lamond 1195. Kurram: Khaiwas to Shalizan, Aitchison 708, 749.

RANGE: Afghanistan, W Pakistan, Kashmir.

Two apparently distinct forms of this species are recognisable and occur throughout its range. The Chitral plant, in common with some of the specimens seen from Kashmir, has a hoary indumentum on the stem whereas the Afghanistan and Ziarat specimens agree with the original type description in having glabrous stems, often glaucous and maroon. This is clear even at a very young stage (Lamond 1195). The Aitchison specimens from the Kurram exhibit both these forms, the taller, and more typical plant being uniformly glabrous, and the smaller, tomentose in the inflorescence region.

J. L. Stewart 2708, for which no provenance can be traced, bears a superficial resemblance to specimens of *Ph. canescens* E. Rgl. but the leaf indumentum is typical of *Ph. spectabilis*.

9. *Ph. canescens* E. Rgl. in Acta Hort. Petrop. 9, 2: 582 (1886). Ic.: Komarov, Fl. URSS, 21; t. 6 (1954).

SYNTYPES. Tadzik SSR "in Turkestan sarafschanica prope Iskanderkul, O. Fedschenko (LE—n.v.); prope Kschut apud fluvium Woru; in angustis Jangturtusch ad lacum Kulikalan (E); et ad montium Mura" A. Regel (LE—n.v.)

AFGHANISTAN. Parvan: Panjshir Valley, Darrah Rastagal, 3800 m, *Hedge & Wendelbo* W. 5215. Parvan/Kabul: Gulbahar to Sarobi, 3310 m, *Gilli* 3617. Kabul: Paghman, 2700–3000 m, *Hedge & Wendelbo* W. 4414, *Koelz* 11113, *Gilli* 3615, 3616, *Rechinger* 17104. Gardez: Altimur Pass (Kotal Tera), 23 km N of Gardez, 26–2700 m, *Rechinger* 31928, *Lamond* 2399.

RANGE: Afghanistan, Pamir-Alai.

The density of the indumentum on the calyx and bracts varies considerably on the specimens seen. Most of those from Afghanistan have only small, adpressed stellate hairs on the calyx and similar hairs, inter-mixed with longer simple ones, on the bracts; *Gilli* 3617 has these simple hairs on the calyx also and in this character matches some of the C Asiatic specimens examined. Bract length is also variable and may be shorter or longer than the calyx.

PLECTRANTHUS L'Herit., Stirp. Nov. 4, 84 verso (1788).

Syn.: *Isodon* [Schrader ex] Benth., Lab. Gen. et Sp. 40 (1832).

1. ***P. rugosus*** [Wall. ex] Benth. in Wall., Pl. As. Rar. 2, 17 (1830–31).

Syn.: *Isodon plectranthoides* [Schrader ex] Benth., Lab. Gen. et Sp. 40: 1832.

TYPE. India. "Simla ad Choor", *Wallich*.

AFGHANISTAN. Nuristan: Seprigal to Voma, *Kitamura* (n.v.); Kulam valley, 2743 m, *Thesiger* 1646; Ningalam to Darim, 13–1900 m, *Neubauer* 970; Kamdesh, 1400 m, *Edelberg* 1154; Chandau, 2440 m, *Koelz* 11770; Nidjaro, 2000 m, *Volk* 2376.

W PAKISTAN. Chitral: Broz, 1560 m, *Harriss* 16538; Shishi Gol, NE of Drosh, 2133 m, *Stainton* 3157. Swat: Madyan to Kalam, 1700 m, *Rechinger* 19373. Peshawar: Cherat, 1300 m, *Halacro Johnston*. Kurram: near Shalizan, *Aitchison* 806 (n.v.) Waziristan: Razmak, 1700 m, *Lowndes* 13. Quetta: Gumbaz to Barkhan, 1050 m, *Lamond* 1367, *Rechinger* 29671, 29672; Ziarat, 2438 m, *Lace* 4023; Bugti, Kahan, 2133 m, *Crookshank* 470. Dera Ghazi Khan: Sulaiman Range, Fort Monroe, 1600 m, *Lamond* 1391.

RANGE: E Afghanistan, W Pakistan and throughout the Himalayas.

This is a good example of a Himalayan species reaching the western extremity of its range in our area (see Studies in Flora of Afghanistan: viii, fig. 4).

R. R. Stewart (in litt.) records *P. coetsa* [Ham. ex] D. Don from Chitral and Swat. It is distinguished from *P. rugosus* by the larger leaves and the leaf indumentum which consists of sparse hairs on the lower surface. No specimens have been seen.

PRUNELLA L., Sp. Plant. 600 (1753); Gen. Plant. ed. 5: 261 (1754).

1. ***P. vulgaris*** L., Sp. Plant. 600 (1753).

Described from Europe. Type in Hort. Cliff. (n.v.).

AFGHANISTAN. Qataghan: Salang Pass (N), 1800–2100 m, *Podlech* 11543, *Frey* 53, *Furse* 6560. Parvan: Salang Pass (S), N of Charikar, 1900–2200 m, *Rechinger* 31293. Kabul: Istalif, *Rechinger* 31191; Paghman, 2600 m, *Volk* 974, *Gilli* 3590.

W PAKISTAN. Chitral: Bashgalian Deh, SW of Chitral 2450 m, *Stainton* 3229. Swat: Kalam, 2200 m, *Rechinger* 19473. Kurram: Karman Village, foothills of Safed Kuh, *Afendi* 33.

RANGE: temperate regions of the N hemisphere.

SATUREIA L., Sp. Plant. 567 (1753); Gen. Plant. ed. 5: 247 (1754).

1. *S. hortensis* L., Sp. Plant. 568 (1753).

Type. "Hab. in Narbonensi et Italia" (LINN—photo!).

W PAKISTAN. Chitral (R. R. Stewart in litt.).

RANGE: SW Asia, Europe and cultivated throughout the temperate regions of the world.

Occasionally planted and occurring as an escape from cultivation.

SCUTELLARIA L., Sp. Plant. 598 (1753); Gen. Plant. ed. 5: 260 (1754).

In the Afghanistan area, as in other parts of SW Asia, *Scutellaria* is a most complex genus taxonomically. The exact specific limits of almost every species dealt with in this account are uncertain and very difficult to define.

- | | |
|--|--|
| 1. Rock crevice tuft-forming species; scutellum on calyx absent | 2 |
| + Not rock crevice tuft-forming species; scutellum on calyx present or not | 4 |
| 2. Stem indumentum of very short adpressed hairs; calyx c. 4.5 mm long; corolla violet-blue | 12. <i>S. ariana</i> Hedge |
| + Stem indumentum of long spreading hairs; calyx c. 2 mm long; corolla pinkish-white | 3 |
| 3. Corolla 20–25 mm, tube 1–1.5 mm broad | 14. <i>S. stocksii</i> Boiss. |
| + Corolla usually 30–40 mm, tube 1 mm broad or if corolla 23–25 mm, tube 0.5–0.8 mm broad | 15. <i>S. leptosiphon</i> Nevski |
| 4. Flowers in short terminal spikes; bracts very prominent | 5 |
| + Flowers in racemes; bracts inconspicuous | 7 |
| 5. Calyx inflating in fruit; high alpine scree plant | 6 |
| + Calyx not inflating in fruit; not high alpine scree plants | 5. <i>S. teucrifolia</i> Dunn |
| 6. Leaf lamina 3–5 mm long | 11. <i>S. macrochlamys</i> Rech. f. & Fitz |
| + Leaf lamina 10–12 mm long | 10. <i>S. heydei</i> Hook f. |
| 7. Indumentum of whole plant consisting of long glandular and eglandular hairs | 2. <i>S. glutinosa</i> Benth. |
| + Indumentum of whole plant not as above; long glandular hairs if present restricted to the inflorescence region | 8 |
| 8. Leaves linear; corolla purplish-pink | 6. <i>S. linearis</i> Benth. |
| + Leaves ovate to triangular-ovate; corolla bluish-violet, dark violet or yellowish | 9 |

9. Lower leaf laminae (2-) 3-5 cm long, broad ovate, clearly cordate, rounded or truncate at base 10
- + Lower leaf laminae 1-1.5 cm long, usually narrow ovate triangular, truncate or rarely subcordate at base 12
10. Stems 10-15 cm high; leaves densely glandular 9. *S. neubaueri* Rech. f.
- + Stems 10-70 cm high; leaves not densely glandular 11
11. Stems sturdy up to 70 cm; leaves clearly cordate; corollas indistinctly curved 8. *S. nuristanica* Rech. f.
- + Stems slender up to 25 cm; leaves rounded or truncate; corollas clearly curved 7. *S. petiolata* Hemsl. & Lace
12. Leaves glabrous or with a very short scattered indumentum; corolla dark violet 13. *S. ghorana* Hedge
- + Leaves with a prominent continuous indumentum; corolla yellowish 13
13. Leaves bluntly toothed or subentire; corolla 2-3 cm, tube 1-1.3 mm broad (only in NW Afghanistan) 4. *S. litvinowii* Bornm.
- + Leaves serrate or dentate; corolla c. 2 cm, tube c. 1 mm broad (widespread except in NW) 14
14. Decumbent-ascending habit; leaves broad ovate-triangular, serrate; leaf indumentum denser below than above 3. *S. edelbergii* Rech. f.
- + Erect habit; leaves narrow ovate-triangular; leaf indumentum \pm same above and below 1. *S. multicaulis* Boiss.

1. *S. multicaulis* Boiss., Diagn. ser. 1, 7: 61 (1846). Ic.: Biol. Skr. 8, 1: fig. 5 (1954) (sub. *S. lorinjensis* Rech. f. & Fitz).

Syn.: *S. multicaulis* Boiss. var. *cabulica* Boiss., Fl. Orient. 4: 684 (1879).

S. koelzii Rech. f. in Biol. Skr. 8, 1: 17 (1954).

S. lorinjensis Rech. f. & Fitz, l.c. 19.

TYPE. Persia: Fars, Kuh Daena, *Kotschy* 526 (holo G—n.v., iso—E, W).

AFGHANISTAN. Paktia: Jaji, Said Karam to Ahmad Khel, 2600 m, *Lamond* 2467. Ghorat: SW Naourak, 2480 m, *Rechinger* 18948; in jugo Tang-i Sorch (Surkh) inter Qala Chahrak (Sharak) et Chisht (Tschischt), *Rechinger* 19176. Orozgan: Kouk-Garm Ab, *Lindberg* 1960: 971. Gardez: montes Safed Kuh, *Rechinger* 32013; Darreh Darang, *Lindberg* 1962: 1. Ghazni: Kouh Mostoufi near Robat, *Lindberg* 1958: 249; Loman, inter Qarabagh et Sang-i Masha, *Rechinger* 17426; Sang-i Masha, *Rechinger* 17469. Kabul: Sar e Cheshma, 2250 m, *Hedge & Wendelbo* W. 4463; Abdullah between Bisut and Unai, 2800 m, *Hedge & Wendelbo* W. 5042; 75 km from Kabul on road to Gardez, 2100 m, *Lamond* 2156; Panjao, 2700 m, *Hedge & Wendelbo* W. 4892; Paghman, 2600-3400 m, *Hedge & Wendelbo* W. 4360, *Gilli* 3584, *Podlech* 11582; Tang-i Gharu, hill near Maipar, *Gilli* 3581. C: Lorinj pass, *Koelz* 13741 (type of *S. lorinjensis*) E: Sirotai, *Koelz* 11947 (type of *S. koelzii*). Bamian: Koh-i Baba, near Bamian, *Gilli* 3583; Band-i Panir, 2800 m, *Rechinger* 18347; NE of Hadjigak pass, 3000 m, *Rechinger* 18498; Bamian, 2500 m, *Hedge & Wendelbo* W. 4650. Qataghan: Khost-o-Fereng, 2100 m, *Podlech* 11884.

RANGE: Afghanistan, Iran.

A very common plant in Afghanistan, *S. multicaulis* is a most polymorphic species with much variation in habit, leaf shape, indumentum, corolla size, colour and shape. For example, the indumentum may consist of eglandular hairs below and long glandular hairs on the inflorescence axis, or may consist of only eglandular hairs or else the leaves may be thickly covered with sessile glands; the corolla colour is basically a yellow tube and a violet tip but the tube may be yellowish green or white and the tip may be bright reddish-purple, deep violet or blue. The impression formed from study of a large number of gatherings and field observations is that only one taxon can be easily recognised and that the innumerable environmental forms are not worth formal taxonomic recognition. The different habitats recorded for *S. multicaulis* are near cultivation, mobile scree, stony slopes, riverside gravel, semi-desert and steppe. In altitude it is recorded from 1700 to 3400 m.

2. *S. glutinosa* Benth. in DC., Prodr. 12: 419 (1848). Ic.: Biol. Skr. 8, 1: fig. 10 (1954) (sub. *S. polyadenia*).

Syn.: *S. polyadenia* Rech. f. in Biol. Skr. 8, 1: 24 (1954).

TYPE. Afghanistan, Griffith (holo—K).

AFGHANISTAN. Kabul: Unai, 3100 m, *Rechinger* 18105, 18559; Sar-e Cheshme, 2250 m, *Hedge & Wendelbo* W. 4463. Nuristan: Purdam pass (Kulam side), 3700 m, *Thesiger* 1615; Daulatshah, *Koelz* 11641 (type of *S. polyadenia*). Paktia: Jaji, Said Karam to Ahmad Khel, 2600 m, *Lamond* 2467, *Rechinger* 32167; between Dre Kalla and Qasim Khel, *Rechinger* 32300.

RANGE: Afghanistan.

S. glutinosa is recognised by the arcuate-ascending habit and the indumentum of long spreading glandular and eglandular hairs on the ovate-triangular leaves. Although specimens with these characters can fairly readily be picked out, there is no doubt that *S. glutinosa* is closely related to *S. multicaulis* and may only be a variant of it.

3. *S. edelbergii* Rech. f. in Biol. Skr. 8, 1: 15 (1954). Ic.: l.c. fig. 3.

Syn.: *S. swatensis* Murata in Acta Phytotax. Geobot. 19: 107 (1963), n.v. Ic.: l.c. fig. 56.

TYPE. Nuristan: Chetras, 2800 m, 30 v 1948, *Edelberg* 846 (holo—W, iso—C. n.v.).

AFGHANISTAN. Nuristan: Kuschtos, 2000 m, *Neubauer* 3365; Kamdesch, *Edelberg* 1140; Pashki, 2600 m, *Edelberg* 739; Kamdesch, Rain, 2000 m, *Gilli* 3580. Badakshan: Doavi, *Lindberg* 1959: 701. Parvan: Panjshir valley, Darrah Rastagal, 3200 m, *Hedge & Wendelbo* W. 5233; Salang pass, 2700 m, *Lamond* 2199, *Stainton* 5077.

W PAKISTAN. Chitral: Chitral Gol, W of Chitral, *Stainton* 2683; Lutko, *Bowes Lyon* 815; Zapotili, 3500 m, *Wendelbo* s.n. Swat: Utror, prope Kalam, 2200 m, *Rechinger* 30819.

RANGE: Afghanistan, W Pakistan (Chitral, Swat).

The specimens above are characterised by the decumbent-ascending habit and the ovate-triangular leaves with an eglandular indumentum thicker on the lower leaf surface. *S. edelbergii* is a near relation of *S. multicaulis*; some of the specimens cited approach it quite closely (e.g. the Chitral plants), others are closely allied to *S. glutinosa* (e.g. the Salang gatherings). I have not been able to examine the type and only gathering of *S. swatensis* but the original description and illustration leave little doubt that it is the same as *S. edelbergii*. *Rechinger* 30819, gathered near the type locality of *S. swatensis* agrees well both with that species and the rest of the *S. edelbergii* material.

The following specimens are anomalous in the dwarf almost prostrate habit and the broad bracts. They may represent a separate taxon.

AFGHANISTAN. Paktia: Peiwar Kotal, c. 2800 m, *Rechinger* 32265; Khost, Gabr Tal, *Neubauer* s.n. W PAKISTAN. Quetta: Urak, *Repp* s.n.; E of Ziarat, 2500 m, *Rechinger* 29390.

4. *S. litvinowii* Bornm., Russk. Bot. Zhurn. 1, 8 (1914). Ic.: Komarov, Fl. URSS 20: t. 7, fig. 4 (1954).

TYPE. Turkmen SSR. Kizyl Arvat, Karakala, Kutenak, *Sintenis* 1726 (E, W).

AFGHANISTAN. Herat: Badghis, *Aitchison* 474.

RANGE: NW Afghanistan, Mountain Turkmenia.

Differing from *S. multicaulis* in the bluntly toothed or subentire leaves and the larger, broader-tubed corollas.

5. *S. teucrifolia* Dunn, Kew Bull. 1924: 386 (1924).

Several syntypes from Kashmir, Gilgit and Swat (K).

W PAKISTAN. Chitral: Jambatai, *Harriss* 16477; Madaklasht, 3900 m, *Stainton* 3121. Swat: Khawazakhiela to Shangla, c. 1700 m, *Lamond* 1706, *Rechinger* 30629.

RANGE: Gilgit, Swat, Chitral, Kashmir.

This species is recognised by the broad leaves, broad greenish-violet bracts and the condensed spikes. The corollas are usually pale yellow with purple tips.

6. *S. linearis* Benth. in Wall., Pl. As. Rar. 1: 66 (1830).

TYPE. Kumaon, *Wallich* 2137 (holo—K).

AFGHANISTAN. Paktia: Akakaol, *Volk* 1105; NW of Khost, *Neubauer* ann. 1963 s.n.

W PAKISTAN. Kurram: Kohat to Parachinar, *Lamond* 1869; Parachinar, *Rechinger* 30953, *Lamond* 1876, *R. R. Stewart* 28060; between Hangu and Thal, *Rechinger* 30880; from Thal to Kurram and Shalizan, *Aitchison* 273. Quetta: Torkhan pass, Loralai to Harnai, *Lamond* 1261, *Rechinger* 29515a, 29515b; Quetta, *Lace* 3487. Peshawar: Cherat, SE of Peshawar, *Lamond* 1569, *Rechinger* 30260a, 30260b. Chitral (?): Panjkora, *Harriss* 16473.

RANGE: W Pakistan, Kashmir, Kumaon.

This is apparently a distinct species recognised by the thick woody rootstock, the prostrate-ascending branches, linear leaves and purplish-pink flowers. Its range of variation is relatively small although there is some variation in the indumentum on the inflorescence. Generally, it consists of long capitate glandular and eglandular hairs but sometimes is entirely eglandular. Two aberrant forms (*Rechinger* 29515b and 30260b), gathered in populations of otherwise typical plants, differ in the sub-erect habit, the broad oblong leaves and the yellowish corollas.

7. *S. petiolata* Hemsl. & Lace in Journ. As. Soc. Bengal 59, 2: 308 (1890); Journ. Linn. Soc. 28: 326 (1891).

TYPE. W Pakistan: Quetta, Ziarat, *Lace* 4006. (K, E).

W PAKISTAN. Quetta: Gumbaz to Barkhan, 1050 m, *Lamond* 1370, *Rechinger* 29664.

RANGE: W Pakistan (Quetta).

See remarks under the following species.

8. *S. nuristanica* Rech. f. in Biol. Skr. 8, 1: 22 (1954). Ic.: l.c. fig. 8.

Syn.: *S. poliochloa* Rech. f. & Edelberg, l.c. 24.

TYPE. Afghanistan. Nuristan: between Ningalam (1300 m) and Darim Ort (1900 m), 5 viii 1951, *Neubauer* 51: 971 (holo—W).

AFGHANISTAN. Kabul: Tangi Gharu, Maipar, 1600 m, *Gilli* 3586. Nuristan: Landesi, *Neubauer* 3302; Dschunia, 1800 m, *Gilli* 3587; Kulam gorge, *Thesiger* 1638, 1645; Kamdesh to Barikot, *Edelberg* 1792 (type of *S. poliochloa*).

W PAKISTAN. Chitral: Beorai Gol, S of Drosh, *Stainton* 3259; Ghairat, *Toppin* 814.

RANGE: Afghanistan, Chitral.

S. nuristanica is a close ally of *S. petiolata* but with the available material it differs in the larger bracts, the less strongly curved corollas and the leafier stems; it is also a taller, sturdier plant. The leaves in *S. nuristanica* may be glabrous (*Stainton* 3259) provided with a short indumentum (*Neubauer* 51: 971) or with a dense indumentum (*Edelberg* 1792); all transitions occur.

Although there is an apparent distributional gap between Quetta (*S. petiolata*) and Kabul (*S. nuristanica*), forms may be found in the intervening area, e.g. Waziristan, which might bridge the differences between the two species.

9. *S. neubaueri* Rech. f. in Biol. Skr. 8, 1: 22 (1954).

TYPE. Afghanistan: Nuristan, between Waigel and Nischai, 12 viii 1951, 51: 737 (holo—W).

RANGE: E Afghanistan.

Only known from a single gathering, *S. neubaueri* is allied to *S. nuristanica* but differs in the hispid-villose glandular indumentum and the dwarf stems.

More gatherings from this area are needed but it may well be only a habit form of *S. nuristanica*.

10. *S. heydei* Hook. f., Fl. Brit. India 4: 667 (1885).

TYPE. Kashmir: Zanskar, Thomson, Heyde (K).

AFGHANISTAN. Badakshan: Panjshir valley, E side of Anjuman pass, 3500 m, Hedge & Wendelbo W. 5482; Wakhan, Noshaq, 4000 m, Roemer 217.

W PAKISTAN. Chitral: Sora Lasht, 3900 m, Bowes Lyon 1091; Rosh Gol, NE of Tirich Mir, 3600 m, Stainton 2822; below Jamishi ghochar, 3900 m, Wendelbo s.n.; upper Yarkhun valley, Schmid s.n.

RANGE: E Afghanistan, Gilgit, Chitral, Kashmir, Tibet.

This high alpine scree species is still little known in our area and consequently its complete range of variation is uncertain. However, it appears to be a most variable species in indumentum, bract size and corolla shape. More than one taxon may be involved but better material, studied in conjunction with the Soviet material of this complex, is needed before the problem can be elucidated. *S. physocalyx* Rgl. & Schmalh. and several allied species recognised by Juzepcuk (Flora URSS 20: 199–207, 1954) appear to be very close to *S. heydei* but this specific name does not occur in Juzepcuk's account.

S. jodudiana B. Fedtsch. (*S. physocalyx* var *jodudiana* (B. Fedtsch.) M. Pop.) was recorded by Kitamura (Additional Reports, Kyoto 136, 1966) from the Noshaq area of Wakhan. I have not seen this specimen but the Roemer gathering from the same area, cited above, is certainly *S. heydei*.

11. *S. macrochlamys* Rech. f. & Fitz in Biol. Skr. 8, 1: 21 (1954). Ic.: l.c. fig. 6.

TYPE. Afghanistan: Bamian (?), Koh-i-Baba, 2400 m, Koeie 2640 (holo—W, iso—C. n.v.).

AFGHANISTAN. Kabul: Paghman, Neubauer 1950: 702, Volk 921.

RANGE: Afghanistan.

Probably not specifically different from *S. heydei* Hook. f., this species only differs from it in the very small leaves and the long petioles. Although there is an apparent distributional gap between the two species, further collecting in the mountains between Paghman and the Anjuman pass will probably reveal its presence in this intervening area and with this additional material it should enable the status of the two taxa to be more thoroughly assessed.

12. *S. ariana* Hedge sp. nov. (plate 5).

Sect. ANASPIS (Rech. f.) Juz. Species insignis, nulli affinis.

Suffrutex ramosus, inferne lignosus. *Caules* 4–6 cm alti, arcuata-erecti, obtuse quadrangulares, paucinodi, simplices, toto longitudine pilis brevibus albis retrorsis eglandulosis (in toto sine pilis glandulosis) provisi. *Folia* c. 14 × 8 mm, ovata, margine integra, apice acuta, basi cuneata in petiolum c.

10 mm leviter attenuata, utrinque pilis brevibus albis antrorsis vestita, nervatura subtus pennato-reticulata vix prominente. *Folia* superiora sensim decrescentia brevius petiolata. *Axis* inflorescentiae cum bracteis et calycibus pilis albis brevibus eglandulosis pubescens. *Inflorescentia* laxiuscula, floribus paucis. *Bracteae* ovato-lanceolatae, acutae, petiolatae, calyce longioribus. *Calyx* florifer c. 4.5 mm, fructifer paulo expansus ad 6 mm, pilis appressis brevibus eglandulosis praeditus. *Corolla* coeruleo-violacea in vivo, in sicco brunneo-purpurascens, 20–25 mm longa, e basi leviter curvata tubo erecto pilis longiusculis albis pubescens. *Nuculae* ignotae. *Floret* Mai.

AFGHANISTAN. Bamian: Darrah Siakar, c. 15 km S of Doab, crevices of rocks, forming tufts, fls. pale violet, deeper along margins, 1500 m, 21 v 1962, *Hedge & Wendelbo* W. 3407 (holo E. iso—BG); Doab, 2000 m, *Volk* 466, 1741; Shibar to Doshi, crevices in limestone cliff, *Furse* 5873; Ajar valley, W of Doab, fls. bluish violet with white on lip, *Hedge & Wendelbo* W. 4108, *Rechinger* 16606. Maymana: Darrah Zang near Belcheragh, 1400 m, *Hedge & Wendelbo* W. 3718, *Lindberg* 1959: 547.

RANGE: Afghanistan (C and NW).

S. ariana is a uniform species characterised by the tuft-forming habit, the short flowering stems, the long-petiolate, entire, cuneate leaves, the entirely eglandular indumentum and the bluish-violet corollas. The combination of these characters give it an isolated position in the section. The specimens cited all come from two areas—around Doab or the Darrah Zang; these two localities both on the north side of the Hindu Kush are geographically quite widely separated but the absence of specimens from the intervening region is most probably a result of under-collecting.

13. *S. ghorana* Hedge sp. nov. (plate 6).

Sect. ANASPIS (Rech. f.) Juz. Combinatione characterum sequentium distinctus: foliis subglabris subintegris, caulibus inferne subglabris superne glandulosis, petiolis brevibus, calycibus magnis.

Caudex crassus lignosus, caulibus pluribus. *Caules* simplices 10–16 cm alti, arcuati-erecti, inferne obtuse, superne acute quadrangulares, paucinodi, internodiis mediis 2–4 cm longis, inferne glabri vel pilis brevissimis eglandulosis tecti, superne dense glandulosi pilis eglandulosis patulis et pilis glandulosis longioribus. *Folia* 10–15 × 8–10 mm, triangulari-ovata, crassa, basi cordata, apice acuta, margine subintegra vel irregulariter subcrenata, utrinque glabra vel pilis brevissimis eglandulosis perpaucis praedita, nervatura subtus vix prominente; petiolus 4–6 mm. *Folia* superiora sensim decrescentia brevius petiolata. *Axis* inflorescentiae cum bracteis et calycibus pilis longis eglandulosis et glandulosis dense glanduloso-pubescens. *Inflorescentia* laxiuscula, 4–7 cm longa. *Bracteae* parvae ovato-lanceolatae, c. 2 mm, brevissime petiolatae, calycibus multo breviores. *Calyx* florifer c. 3 mm longus, fructifer expansus ad 5 mm. *Corolla* c. 18 mm longa, colore in vivo atrovioleacea, in sicco brunneo-purpurascens, tubo c. 1 mm crassa, tenui, glanduloso-pubescens, fere recta, horizontaliter patentia. *Nuculae* ignotae. *Floret* Jun.–Jul.

AFGHANISTAN. Ghorat: in faucibus calc. infra Parjuman (Partcheman), c. 33° 10' N, 63° 52' E, c. 1850 m, *Rechinger* 19022 (holo—W).



PLATE 5. Type specimen of *Scutellaria ariana* Hedge.



PLATE 6. Type specimen of *Scutellaria ghorana* Hedge.

RANGE: Afghanistan.

This interesting new species is only known from the type gathering in the west of Afghanistan. It is not closely allied to any other species in Afghanistan nor, it would appear, to any Soviet C Asiatic species. The combination of the almost glabrous leaves, the short petioles, the glandular inflorescence, and the large calyces give it an isolated position. Although *S. ghorana* has been placed in sect. *Anaspis*, it appears to be a slightly anomalous member of the section in that in the new species a small rudimentary scutellum is present whereas the main reason for recognising *Anaspis* is the absence of a scutellum.

14. *S. stocksii* Boiss., Diagn. ser. 2, 4: 28 (1859).

TYPE. W Pakistan: Quetta, Chehel Tun (Chiltan), *Stocks* 1027 (holo—G. n.v., iso—K).

AFGHANISTAN. Kabul: upper part of Tang-i-Gharu, 1800 m, *Hedge & Wendelbo* W. 4262, *Rechinger* 16918; Sher Darwasa, 1800 m, *Hedge & Wendelbo* W. 4301, *Rechinger* 16997, *Gilli* 3588; Kuh Qorogh, 2000 m, *Rechinger* 18001; Kabul to Gardez, Altimur pass (Kotal Tera), 2600 m, *Lamond* 2398, *Rechinger* 31949; Logar, *Bellew* 83, *Volk* 1732. Ghorat: Parjuman (Partcheman), 1850 m, *Rechinger* 19026.

W PAKISTAN. Quetta: Pil Rift, 1980 m, *Lace* 3881; near Quetta, 2500 m, *Popov* 281; Hanna, R. R. *Stewart* 28061. Waziristan, Shakai, *Duthie*.

RANGE: Afghanistan, W Pakistan.

The leaves in the type gathering are eglandular but in the majority of the specimens examined, there is, in addition to the eglandular hairs, a more or less dense capitate glandular indumentum. A fairly common rock-crevice plant within its limited range, *S. stocksii* varies relatively little in facies and characters; the flower colour is whitish-pink.

S. leptosiphon Nevski is a very near relative of *S. stocksii* and may not differ specifically. In distribution the two species are apparently disjunct.

15. *S. leptosiphon* Nevski in Trud. Bot. Inst. Akad. Nauk 1, 4: 324 (1937). Ic.: l.c. fig. 13.

TYPE. Turkmen SSR: in rupibus calcareis angustiarum ad pedes montium Kuhitang prope pagum Kuhitang, *Nevski* 2 (LE—n.v.).

A. Indumentum glandular; corolla c. 23 mm long, tube c. 0.8 mm wide.

Afghanistan. Bamian (?): Kala Sarkari, fls. pale rose, centre deeper, 2150 m, *Koelz*, 13921; Binimang, 2450 m, *Koelz* 13882.

B. Indumentum eglandular; corolla c. 30 mm long, tube 1 mm wide.

Afghanistan. Maymana: between Maymana and Belcheragh, fls. purplish lilac with white markings, 900 m, *Hedge & Wendelbo* W. 3679 (observed in other localities nearby).

C. Indumentum eglandular; corolla 25–30 mm long, tube 0.5 mm wide.

Afghanistan. Mazar-i-Sharif: Aq Kupruk, fls. white with purple on labellum,

750 m, *Hedge & Wendelbo* W. 3930, *Rechinger* 16301; Koh-i Elburz, Cheshma-i Shafa, fls. almost white with some pinkish-purple, 900 m, *Hedge & Wendelbo* W. 3858, *Rechinger* 16220, 16239.

D. Indumentum eglandular; corolla c. 40 mm long, tube 1 mm wide.

Afghanistan. Mazar-i-Sharif: Kouh Baz near Haibak, *Lindberg* 1959: 463.

Range of species: N Afghanistan, Pamir-Alai.

Because of the lack of material for comparison among the Soviet C Asiatic species of subgenus *Apeltanthus*, I have been unable to reach a decision about the status of the specimens cited and have consequently designated them informally. On the one hand, they may represent separate subspecies or even species but on the other, further gatherings might reveal so many intermediates that in reality, only one species with local varieties is involved. Further gatherings in N Afghanistan, together with study of the Soviet representatives, are needed before a definite decision can be reached.

SIDERITIS L., Sp. Plant. 574 (1753); Gen. Plant. ed 5: 250 (1754).

1. *S. montana* L., Sp. Plant. 575 (1753). Ic.: Hegi, Ill. Fl. Mittel-europa 5, 4: 2404 (1927).

TYPE. "Hab. in Oriente?"

AFGHANISTAN. Qataghan: Andarab Tal, Darrah-i-Kasan, NE of Deh-Salah, 1800 m, *Podlech* 11687. Bamian: Lorinj, 2450 m, *Koelz* 13697. Kabul: Kabul, W of town, 1800 m, *Hedge & Wendelbo* W. 3234; Arbarb, 2150 m, *Chaworth-Musters*; Paghman, *Neubauer* 718. Ghazni: Sang-i Masha, 2500 m, *Rechinger* 17448.

RANGE: Afghanistan, W Pakistan, C and SW Asia, Europe.

Although a specimen has been seen from the Poonch River in Kashmir, there are no other records east of Afghanistan.

The uppermost bracts in the cited specimens are green and not yellow as is often the case in specimens from further west.

STACHYOPSIS M. Pop. & Vved. in Trud. Turk. Nauch. Obsch. 1: 120 (1923).

1. Leaf margins subentire or irregularly crenate

1. *S. maleolens* (Rech. f.) Hedge

+ Leaf margins deeply serrate **2.** *S. oblongata* (Schrenk) M. Pop. & Vved.

1. *S. maleolens* (Rech. f.) Hedge **comb. nov.** Ic.: Biol. Skr. 8, 1: fig. 36, 37d (1954) (sub *Stachys maleolens*).

Syn.: *Stachys maleolens* Rech. f. in Biol. Skr. 8, 1: 60 (1954).

TYPE. Afghanistan. Nuristan: Khash district, 3200 m, *Koelz* 13014 (holo—W, iso—BPI—n.v.).

RANGE: NE Afghanistan.

Only known from the inadequate type gathering, *S. maleolens* is doubtfully different from *S. oblongata*.

2. *S. oblongata* (Schrenk) M. Pop. & Vved. in Trud. Turk. Nauch. Obshch. 1: 121 (1923).

Syn.: *Phlomis oblongata* Schrenk in Fisch. & C. A. Meyer, Enum. Pl. Nov. 1, 29: 1841.

Leonurus dschungaricus Rgl., Trud. Bot. Sada 6: 367 (1879).

TYPE. Tian Shan "in vallibus graminosis montium Dschillkaragai," Schrenk (LE—n.v.).

AFGHANISTAN. Paktia: Mt. Sikaram, not uncommon in mosses above 3350 m, Aitchison 817. (as *Stachys* sp. in Journ. Linn. Soc. Bot. 18: 88, 1880).

RANGE: Afghanistan, Syr-Darya, Dzungaro-Tarbagatai, Tian Shan, Pamir-Alai.

This species was until recently not known outside Soviet C Asia. In addition to the very interesting record from Sikaram, two gatherings from the Kaghan valley in W Pakistan have been seen: Kaghan, Saiful Maluk, *Zia al Hassan* 22725 (BM); between Balakot and Babusar pass, ann. 1954, *Abel* s.n. (BM). Very few Soviet specimens have been available for comparison but there is no apparent specific difference between them and those cited.

STACHYS L., Sp. Plant. 580 (1753); Gen. Plant. ed. 5: 253 (1754).

- | | |
|--|--|
| 1. Stem and leaves with a dense floccose indumentum | 2 |
| + Stem and leaves tomentose or villous, never floccose | 3 |
| 2. Leaves sessile, rounded at base, oblong; corolla c. 5 mm, scarcely exerted from calyx | 1. <i>S. parviflora</i> Benth. |
| + Leaves petiolate, cordate, ovate; corolla 10–14 mm, exerted from calyx | 2. <i>S. floccosa</i> Benth. |
| 3. Annual; leaf indumentum of scattered simple hairs | 6. <i>S. arvensis</i> L. |
| + Perennial; leaf indumentum thick, with simple or stellate hairs | 4 |
| 4. Verticils 2-flowered; leaves linear-oblong; indumentum stellate | 5. <i>S. trinervis</i> Aitch. & Hemsl. |
| + Verticils several-flowered; leaves oblong or ovate; indumentum of simple hairs | 5 |
| 5. Leaves oblong; calyx teeth recurved | 4. <i>S. setifera</i> C.A.M. |
| + Leaves ovate; calyx teeth straight | 3. <i>S. sericea</i> [Wall. ex] Benth. |

1. *S. parviflora* Benth. in DC., Prodr. 12: 490 (1848).

Syn.: *Phlomidioschema parviflorum* (Benth.) Vved. in Not. Syst. Leningrad 9: 54 (1941).

SYNTYPES. Afghanistan, in regno cabulico, Griffith (holo—K). Kashmir (?), prope Drumtour, Falconer.

AFGHANISTAN. Maymana: c. 30 km W of Maymana, 500 m, Hedge & Wendelbo W. 3649. Herat: Kala Nao, 1000 m, Amsel s.n.; Sauzak, Koeie 2192. Mazar-i Sharif: inter Cheshme Shafa et Aq Kupruk, 900 m, Rechinger 16289; Haibak Frey 484. Qataghan: Khost-o-Fereng, 1500 m, Podlech 11957. Kandahar:

near Kandahar, 1000 m, *Koeie* 2152. Ghorat: inter Qala Ahangaran et Qala Sharak, 2500 m, *Rechinger* 18846. Paktia: inter Dre Kalla et Qasim Khel, *Rechinger* 32305. Kabul: Koh-i Asamai, 1900 m, *Hedge & Wendelbo* W. 3121. Bamian: Band-e Amir, 2900 m, *Hedge & Wendelbo* W. 4764; inter Bulola et jugum Shibar, *Rechinger* 16832. Parvan: Panshir valley, N of Dasht-e Rewat, 2500 m, *Podlech* 12253.

W PAKISTAN. Quetta: Quetta to Chaman, 1800 m, *Lamond* 1033; montes Sulaiman, Mekhtar, *Rechinger* 29779. Peshawar: in jugo Landi Kotal (Khyber Pass), *Rechinger* 30303. Kurram: Parachinar, 1500 m, *Lamond* 1879. Waziristan: Wana, *Duthie* 15657. Swat: Mingora, *Ali* 25980.

RANGE: Afghanistan, W Pakistan, Pamir-Alai, Punjab.

A very distinct species recognised by the very small (c. 5 mm) reddish-purple corollas and shrubby habit. The leaf indumentum varies between densely floccose on both surfaces to floccose beneath and subglabrous green above. Vvedensky recognised it as a separate genus on account of the included stamens.

2. *S. floccosa* Benth., Lab. Gen. et Sp. 739 (1835).

TYPE. Kashmir: Hirpour, *Jacquemont* (K).

AFGHANISTAN. Paktia: Jaji, Ali Khel to Peiwar Kotal, 2500 m, *Lamond* 2500, *Rechinger* 32216. Kabul: between Sarobi and Gulbahar, 3100 m, *Gilli* 3597. Nangarhar: N of Basarak, 2450 m, *Gilli* 3596; Najil, *Koelz* 11628.

W PAKISTAN. Kurram: Shalizan, *Aitchison* 695. Swat: inter Madyan et Kalam, 1700 m, *Rechinger* 19372; Kalam, *Rechinger* 19419. Chitral: Jingoret, *Toppin* 779; Dir, *Harriss* 16544.

RANGE: E Afghanistan, Chitral, Swat, Kurram valley, Kashmir.

Variable in the density of indumentum and the size of the calyx. The specimen which was provisionally assigned to *S. hissarica* Rgl. in *Symbolae Afghanicae* (Biol. Skr. 8, 1: 60, 1954) is *S. floccosa* Benth.

3. *S. sericea* [Wall. ex] Benth. in Wall., Pl. As. Rar. 1: 64 (1830).

TYPE. Kamaon, *Wallich* 2077.

AFGHANISTAN. E: Khelenmargh, 3500 m, *Neubauer* s.n.

W PAKISTAN. Swat: Kalam, *R. R. Stewart* 24693.

RANGE: NE Afghanistan, Gilgit, Swat, Hazara, Kashmir, Punjab, Nepal, Bhutan.

A common species in Nepal and Bhutan reaching its western extremity in Afghanistan.

4. *S. setifera* C.A.M., Verzeich. 94 (1831) s.l.

TYPE. Talish, prope pagum Swant, *C. A. Meyer* (LE-n.v.).

AFGHANISTAN. Maymana: Belčeragh, Darrah Belčeragh, 1200 m, *Hedge & Wendelbo* W. 3771. Badakshan: Jurm, *Koelz* 12971. Mazar-i Sharif (?): Mak, *Koelz* 14072. Kabul: Arbarp, *Chaworth-Musters* s.n.; *Hay* 217.

RANGE: Afghanistan, Tian Shan, Pamir-Alai, Iran, Caucasus, Turkey.

Gandoger (Bull. Soc. Bot. France 65: 68, 1918) gave a key, without fuller descriptions, to several species which he split off from *S. setifera*. One of these, which he called *S. bornmülleri* Gand.* (based on *Bornmüller* 4298 from Kerman, S. Persia) agrees with some of the cited Afghanistan specimens (e.g. the two *Koelz* numbers), but its right to specific status is doubtful. The impression formed, from examination of a fairly wide range of material, is that *S. bornmülleri* and several other of Gandoger's 'splits' are environmental forms that occur throughout the species range. But more detailed investigation is needed to determine their worth.

5. *S. trinervis* Aitch. & Hemsl. in Trans. Linn. Soc. ser. 2, 3: 97 (1888). Ic.: l.c. t. 43.

TYPE. Afghanistan. Herat: Hari-rud valley, 10 v 1885, *Aitchison* 157 (holo—K).

AFGHANISTAN. Herat: Herat, *Amsel* s.n.; N of Sauzak, 1600 m, *Koeie* 3909; N of Herat, 1200 m, *Koeie* 4068. Farah: Jija, 1300 m, *Koeie* 3592. Maymana: between Belčeragh and Maymana, 1000 m, *Hedge & Wendelbo* W. 3784.

RANGE: NW Afghanistan, Turcomania, NE Iran.

This species is easily recognised by the shrubby habit, the stellate indumentum, the whitish stems and the white or lilac-white corollas. Although *Aitchison* mentioned in his field notes that it grew up to 4 feet in height, subsequent gatherings are much smaller.

6. *S. arvensis* L., Sp. Plant. ed. 2: 814 (1762).

TYPE: "Hab. in Europae arvensis" (LINN.).

AFGHANISTAN. Kandahar: Pirzada, 1000 m, *Koeie* 3384.

RANGE: Europe, N Africa, and adventive elsewhere.

Probably an introduced weed in Afghanistan.

TEUCRIUM L., Sp. Plant. 562 (1753); Gen. Plant. ed. 5: 247 (1754).

- | | |
|--|--|
| 1. Leaves ovate, base often subcordate, 4–7 cm long, petiole 0.5–2 cm; calyx teeth unequal | 1. <i>T. royleanum</i> [Wall. ex] Benth. |
| + Leaves elliptic to obovate, base cuneate or rounded, 0.5–2 (–5) cm long, ± sessile; calyx teeth subequal | 2 |
| 2. Inflorescence in axillary whorls, flowers pedicellate | 2. <i>T. scordium</i> L. |
| + Inflorescence terminal, flowers ± sessile | 3 |
| 3. Calyx indumentum dense, woolly-tomentose; inflorescence branched | 3. <i>T. polium</i> L. |
| + Calyx indumentum usually sparse; inflorescence in solitary spikes or capitulae | 4. <i>T. stocksianum</i> Boiss. |

* Antedated by *S. bornmülleri* Hand.-Mazz. in Ann. Nathist. Hofmus. Wien 27: 414 (1913).

RANGE: E Afghanistan, W Pakistan.

With the material now available it is clear that *T. serratum* cannot be maintained as a species separate from *T. scordium*. Although many specimens e.g. *Rechinger* 17479 or *Hedge & Wendelbo* W. 4270 have obviously larger calyces and acutely serrated leaves, the characters used to distinguish the species *T. serratum*, intermediates are found throughout the species range.

var. **glabrescens** (Murata) Hedge & Lamond **comb. nov.**

Syn.: *T. serratum* Benth. var. *glabrescens* Murata in Acta Phytotax. Geobot. 17: 75 (1958).

T. serratum sensu Prain in Journ. As. Soc. Beng. 59, 2: 317 (1890) and Mukerjee in Rec. Bot. Surv. Ind. 14: 216 (1940) non Benth.

TYPE. Afghanistan. Nuristan: between Voma and Trokikorl, *Kitamura*, (KYO—n.v.).

AFGHANISTAN. Nuristan: Kandai to Chigha Serai, 1300 m, *Rechinger* 32437, *Lamond* 2540; Nishei, *Edelberg* 815.

W PAKISTAN. Chitral: *Giles* 355, *Toppin* 320; Drosh, *Harriss* 16519; Gahirat, 1300 m, *Bowes Lyon* 711. Gilgit?: N of Hindu Kush, *Giles*. Peshawar: Khyber Pass, 650–900 m, *Lamond* 1617.

RANGE: Afghanistan (Nuristan), NW Pakistan.

These plants from Nuristan and the NW Himalyas clearly differ from the other varieties in the very short indumentum, the somewhat remote whorls and the slender habit. The descriptions given and the specimens cited by Prain (l.c.) and Mukerjee (l.c.) under *T. serratum* do not agree with the Griffith type which has long, spreading silky hairs, and they are referable to var. *glabrescens*. No obvious intermediates have been seen between var. *glabrescens* and the other two varieties and further collecting may prove that it warrants a higher rank.

3. *T. polium* L. Sp. Plant. 566 (1753).

TYPE. "Hab. in Italia, Hispania, Lusitania, Narbona" (LINN—photo!).

IRAN. Khorasan: *Aitchison* 791.

AFGHANISTAN. Farah: Jija 900 m, *Koeie* 3373, *Lindberg* 1962:109. Girishk: 1000 m, *Koeie* 2149.

RANGE: Afghanistan, SW Asia, Europe, N Africa.

The cited Afghan gatherings show a considerable eastern extension of the species range. Previously it was not recorded east of NE Iran and the Kopet Dag.

4. *T. stocksianum* Boiss. Diagn. ser. 2, 4: 58 (1859).

Study of fairly abundant material of *T. stocksianum* and *T. incanum* Aitch. & Hemsl. has shown that they can only be separated by an indumentum

difference and that, with the material now available, the most logical treatment is the recognition of one species with three distinct varieties.

- a. Indumentum on stem and leaves of stiff, spreading hairs
var. *patulum* Hedge & Lamond
- + Indumentum on stem and leaves of short, crisp, adpressed hairs b
- b. Indumentum on calyx, stem and leaves all similar, crisp, adpressed and curling
var. *stocksianum*
- + Calyx teeth with long straight hairs
var. *incanum* (Aitch. & Hemsl.) Hedge & Lamond

var. *stocksianum*

TYPE. W Pakistan. "Hab. in ditone Beloutschistan superiori ad cacumen colli Hurbab in montibus Kala (Hala), 1520 m," *Stocks* (K—p.p.).

W PAKISTAN. Waziristan: Barwand 1220 m, *Harsukh* 15700; 1060 m, *J.L. Stewart* 124. Makran: Hoshab, *Rechinger* 28011, *Lamond* 521; Awaran to Turbat, 100–200 m *Rechinger* 27762.

RANGE: W Pakistan (Baluchistan), SE Iran.

Study of the isotype material at Kew showed that two distinct varieties are present on the sheets. In Boissier's original description of *T. stocksianum* he compared it with the Arabian *T. leucocladum* Boiss. in indumentum and leaf form. Most of the specimens on the two type sheets (numbered *Stocks* 810) at Kew match this description and the remainder are referable to var. *patulum*. It is possible that they were collected in separate localities, perhaps in different years, but the labels are somewhat confusing.

The character of ovate-rotund capitulae mentioned by Boissier appears to be one of immaturity. The inflorescence elongates with age.

var. *patulum* Hedge & Lamond var. nov.

A var. *stocksiano* indumento patulo rigido differt.

TYPE. W Pakistan. Baluchistan: Quetta; in parte inferiore faucium Torkhan supra Harnai, 900 m, 14 v 1965, *Rechinger* 29476 (holo—W).

W PAKISTAN. Quetta: Chiltan ?, *Stocks* 810 p.p.; Quetta, *Koeie* 3374, *Hanif* 17, *Popov* 184; Fort Sandeman, *Harsukh* 20629; Zandra, Ziarat, *Jafri & Akhar* 2199, *Lace* 3846; Loralai to Sanjawi, 15–1600 m, *Lamond* 1228, *Rechinger* 29438; Torkhan Pass, *Lamond* 1247, *Rechinger* 29457; Wam Tangi, *Rechinger* 29566, *Lace*; 38 km E of Gumbaz, 1050 m, *Rechinger* 29679. Dera Ghazi Khan: Sulaiman Mts., Fort Munro, 1600–1800 m, *Rechinger* 29737.

RANGE: W Pakistan (Quetta division).

It is difficult to establish the provenance of the *Stocks* specimen of this variety. Mounted on the same sheet as the type variety is a label annotated Chihil Tun (Chiltan) and this may refer to our plant. Around Quetta the geographical areas of var. *patulum* and var. *stocksianum* overlap and an intermediate state is found in *Hanif* 17. The records of *T. stocksianum* of recent authors probably refer to var. *patulum* and not to the type variety.

var. *incanum* (Aitch. & Hemsl.) Hedge & Lamond comb. et stat. nov.

Syn.: *T. incanum* Aitch. & Hemsl. in Journ. Linn. Soc. 19: 184 (1882).

T. toppinii Dunn & Williams in Kew Bull. 1921: 122 (1921).

TYPE. W Pakistan. Kurram, between Thal and Badish-Khel growing gregariously on the low conglomerate hills at an altitude of not above 1050 m, *Aitchison* 444 (holo—K).

AFGHANISTAN. Parvan: Bagramital, c. 2000 m, *Neubauer* 4552. Nangarhar: Kandai, *Rechinger* 32458; Jalalabad to Chigha Serai, 750 m, *Lamond* 2535, *Rechinger* 32402; Barikot to Kamdesh, *Gilli* 3632; Vaigel, *Edelberg* 888; Barikot, *Edelberg* 1795 (the last two cited under *T. stocksianum* in Biol Skr. 8, 1: 15, 1954).

W PAKISTAN. Chitral: *Toppin* 313 (type of *T. toppinii*). Swat: Mingora, 900 m, *R. R. Stewart* 24756; Barikot to Mingora, *Rechinger* 30497; near Saidu Sharif, 1050 m, *Rodin* 5404. Peshawar: Khyber Pass, *Burt* 584, *Lamond* 1601, *Rechinger* 30317, *Lowndes* 689. Kohat: c. 20 km W of Kohat, *Burt* 706, *Lamond* 1551, *Rechinger* 30200. Kurram: Amal Kot to Sadda, c 15 km from Parachinar, 1400 m, *Lamond* 1895, *Rechinger* 30975.

RANGE: E Afghanistan, W Pakistan (NW Frontier Provinces), Punjab.

Not previously recorded outwith the NW Himalayan-Punjab region, the extension of the range of this variety to Bagram and the Nuristan area is not surprising. In the original description Aitchison & Hemsley distinguished *T. incanum* from *T. stocksianum* on the larger flowers and canescent indumentum. A complete range of corolla size is found throughout the three varieties. The indumentum character suggests that comparison was being made with var. *patulum*. *Lamond* 2535 and *Rechinger* 32402 are not such densely canescent plants as the other cited specimens.

THUSPEINANTA Durand, Ind. 703 (1888).

Syn.: *Tapeinanthus* [Boiss. ex] Benth. in DC., Prodr. 12: 436 (1848) non Herbert (1837).

- 1. Indumentum of glandular hairs; corolla tube clearly exerted from calyx; calyx teeth broad-triangular 1. *Th. persica* (Benth.) Briq.
- + Indumentum of white-hispid, eglandular hairs; corolla tube \pm equalling calyx; calyx teeth triangular-lanceolate 2. *Th. brahuica* (Benth.) Briq.

1. *Th. persica* (Benth.) Briq. in Pflanzenfam. 4, 3a: 229 (1896). Ic.: Trans. Linn. Soc. Bot. 3: t. 42, fig. 1-6 (1888) (sub *Chamaesphacos persicus*).

Syn.: *Tapeinanthus persicus* [Boiss. ex] Benth. in DC, Prodr. 12: 436 (1848).

Chamaesphacos persicus (Benth.) Aitch. & Hemsl. in Trans. Linn. Soc. Bot. 3: 97 (1888).

TYPE. Persia. "Hab. in arenosis prope Tehran" *Kotschy* 18 (G—n.v.).

PERSIA/AFGHANISTAN. Meshed to Herat, 914 m, *Furse* 5322.

RANGE: Afghanistan, Turcomania, Iran, Iraq.

2. *Th. brahuica* (Boiss.) Briq. in Pflanzenfam. 4, 3a: 229 (1896). Ic.: Trans. Linn. Soc. Bot. 3: t. 42, fig. 7-11 (1888) (sub *Chamaesphacos afghanicus*).

Syn.: *Tapeinanthus brahuicus* Boiss., Diagn. ser 2, 4: 29 (1859).

Chamaesphacos brahuicus (Boiss.) Aitch. & Hemsl. in Trans. Linn. Soc. Bot. 3: 97 (1888).

Ch. afghanicus Aitch. & Hemsl. in Trans. Linn. Soc. Bot. 3: 97 (1888).

TYPE. W Pakistan. "Hab. in ditone Beloutschistan ubi detexit cl. et beatus" Stocks. (holo—G, iso—K sub no. 940).

PERSIA. Khorasan, *Aitchison* 626.

AFGHANISTAN. Herat: N of Herat, 900-1100 m, *Koeie* 4059; Hari Rud, *Aitchison* 183 (type of *Chamaesphacos afghanicus*). Farah: Jija, 1200 m, *Koelz* 3574. Kabul: Kabul, Kuh-i-Nanagak, S of Gulbagh, 1830 m, *Hedge & Wendelbo* W. 3192; in jugi Lataband, 1800-2100 m, *Rechinger* 31087.

W PAKISTAN. Quetta: Pishin, *Lace*; Yaro near Bostan, c. 40 km from Quetta on road to Chaman, 1450 m, *Lamond* 988, *Rechinger* 28923. Baluchistan: Kalat, Panjgur to Surab, Basima near Jangal, 1350 m, *Lamond* 656, *Rechinger* 28302; Kalat, weed in field, *Jafri & Akhar* 1965.

RANGE: Afghanistan, W Pakistan, Iran.

There is no morphological difference to warrant keeping *Aitchison* 183 as the separate species *Chamaesphacos afghanicus*. It was collected under shrubs and in wet soil and this may account for the habit and indumentum differences. In all other respects it is a typical plant of *Th. brahuica*.

THYMUS L., Sp. Plant. 590 (1753); Gen. Plant. ed 5: 257 (1754).

This account is very provisional. As additional material becomes available for study, the number of variants increases and the problems multiply. At the present time, it appears that two main taxa are involved: the first from the NW of the country and the second from the E and NE of the country. No thymes have been collected in any other part of Afghanistan.

- | | |
|---|-------------------------------|
| 1. Stems subglabrous without prostrate sterile shoots; calyx 7-8 mm; corolla c 11 mm | 1. <i>T. koeieanus</i> Ronn. |
| + Stems with an obvious indumentum and with prostrate sterile shoots; calyx 4-5 mm; corolla 5-9 mm (<i>T. serpyllum</i> L. agg.) | 2 |
| 2. Leaves elliptic to linear | 2. <i>T. "sp. nov."</i> |
| + Leaves obovate | 3. <i>T. afghanicus</i> Ronn. |

1. *T. koeieanus* Ronn. in Biol. Skr. 8, 1: 78 (1954). Ic.: l.c. fig. 50.

TYPE. Afghanistan: Sauzak, NW of Herat, 2500 m, 10 vi 1948, *Koeie* (holo—W, iso—E, C—n.v.).

AFGHANISTAN. Herat: Kotal Salzak, *Neubauer* 3504, *Lindberg* 644.

RANGE: NW Afghanistan.

T. koeieanus is allied to the polymorphic *T. kotschyanus* Boiss. & Hohen.

from Iran but apparently differs in the sparse indumentum on the stems and the non-ciliate leaf bases.

2. *T. "sp. nov."*

AFGHANISTAN. Paktia: Peiwar Kotal, 2700 m, *Rechinger* 32226; Ali Khel to Peiwar Kotal, 2500 m, *Lamond* 2480.

W PAKISTAN. Kurram: Parachinar, 1500 m, *Lamond* 1871. Quetta: Ziarat, 2100 m, *Rechinger* 29370, *Lace* 3970; Shinghar, 50 km N Fort Sandeman, 2050 m, *Lamond* 1477; mountain above Quetta, 3000 m, *Popov* 326.

RANGE: E Afghanistan, W Pakistan.

This taxon is certainly closely related to *T. afghanicus* but can apparently be separated on the narrow, often linear, uni-nerved leaves. Otherwise there are no clear morphological differences between them although their geographic distributions are separate: *T. "sp. nov."* from the Quetta-Kurram region and *T. afghanicus* from Nuristan, Swat and Chitral. I have deferred giving the former taxon a formal name and description as Dr. Klokov is still working on the Asiatic species and has already given the *Lace* sheet, cited above, an as yet unpublished name.

3. *T. afghanicus* Ronn. in Biol. Skr. 8, 1: 77 (1954). Ic.: l.c. fig. 48.

Syn.: *T. pseudalbanus* Ronn. and var. *angustifrons* Ronn. l.c. 79.

TYPE. Afghanistan: Nuristan, Khash district, 3050 m, *Koelz* 12981 (holo—W, iso—BPI—n.v.).

AFGHANISTAN. Nuristan: Pashki, 2300 m, *Edelberg* 912; Wanasgul Pass, 4500 m, *Thesiger* 1564; Weran, 3800 m, *Edelberg* 1251 (as *T. coriifolius* Ronn. in Biol. Skr. 8, 1: 78, 1954); Kamdesch, 2800 m, *Gilli* 3449; Urura Pass, 3000 m, *Neubauer* 642. Parvan: S side Salang Pass, 2700–3000 m, *Rechinger* 31567; between Gulbahar and Sarobi, 2580 m, *Gilli* 3451; Bagrami, Nedjerau, 2600 m, *Neubauer* 315. Qataghan: Khost-o-Fereng, 2200 m, *Podlech* 11937; Andarab valley, 2700 m, *Podlech* 11056. Badakshan: Wakhan, Sarhad, 2900–4000 m, *Roemer* 329.

W PAKISTAN. Swat: Bahrein, 2200 m, *Rechinger* 19472; Jabba Valley, 1900 m, *Lamond* 1787. Chitral: Lowari Pass, *Harriss* 16484; below Zapotli, 3500 m, *Wendelbo* s.n.; Oihor Gol, *Bowes Lyon* 852.

RANGE: NE and E Afghanistan, Chitral, Swat.

When the late Dr. Ronniger worked over the *Thymus* material from Afghanistan in the early 1950's, he was dealing with a limited number of specimens. Now there is a fairly large collection of *Thymus* from Afghanistan and W Pakistan which has necessitated a re-appraisal of Ronniger's treatment in *Symbolae Afghanicae*. The situation now is clearly such that either one recognises an unending number of ill-defined taxa (as has already happened in Klokov's treatment of *Thymus* in the Soviet Union) or else one admits that such a classification is hopelessly artificial and that for general purposes easily circumscribed and defined taxa are the only practical solution. In this case, I find that

there is such a degree of polymorphism and intergradation among the taxa already recorded that in fact only one species can be recognised. It is an under-shrub with long prostrate sterile shoots and erect or ascending flowering stems; the leaves are elliptic-ovate to obovate with 2 or 3 prominent lateral veins below, ciliate at base or not, otherwise glabrous; the stems are goniotrichous or holotrichous with retrorse or spreading hairs; the calyx has long spreading hairs or is sub-glabrous except for the ciliate upper teeth. There is little doubt that many of its facets closely approach variants of the European *T. serpyllum* L. and although I have designated the Afghan plant as *T. afghanicus* Ronn., I regard this as a temporary expedient, pending a more thorough investigation of the problem. A fairly cursory examination of material from Kashmir along the Himalaya to N China suggests that this is at least the same macro-species as the Afghan one and that to call it *T. serpyllum* L. subsp. *quinquecostatus* (Čelak.) Kitamura (Plants of W Pakistan and Afghanistan 132, 1964) is not unwarranted.

ZATARIA Boiss., Diagn. ser. 1, 5: 18 (1844).

1. *Z. multiflora* Boiss., l.c. Ic.: Hook., Ic. Pl. 15: t. 1428 (1883).

Syn.: *Z. bracteata* Boiss., Diagn. ser. 2, 4: 12 (1859).

Z. multiflora Boiss. var. *elatior* Boiss., Fl. Orient. 4: 562 (1879).

TYPE. "Hab. in Persia australi" Aucher 5192 (holo—G—n.v., iso—K).

AFGHANISTAN. Kabul: Tang-e Gharu, 1100–1300 m, *Rechinger* 16972; 15 km W of Sarobi, 1200 m, *Hedge & Wendelbo* W. 4286. Nangarhar: Otipore, *Griffith* (type of *Z. bracteata*); Ningalam to Darim, 13–1900 m, *Neubauer* 948; Pol-i-Gawardesch, 830 m, *Gilli* 3454.

W PAKISTAN. Gilgit: *Giles*. Chitral: Mirkandi, *Harriss* 16559. Quetta: Chiltan, 1600 m, *Lamond* 1095, *Rechinger* 29096, *Stocks* 1064; Pil Rift, 1670 m, *Lace* 3936; near Duzan, Bolan Pass, *Jafri* 2958.

RANGE: Afghanistan, W Pakistan, Iran, Oman.

Only a few of all the specimens examined showed normal flowers. Most were male-sterile, either with stamens present but devoid of any trace of pollen or else with stunted stamens. At the eastern end of the range some plants are apparently female sterile, a very unusual occurrence in the Labiatae. *Zataria* is easily recognised on herbarium specimens by the small round buds in the leaf axils which are densely covered in white hairs.

ZIZIPHORA L., Sp. Plant. 21 (1753); Gen. Plant. ed. 5: 13 (1754).

- | | |
|--|----------------------------------|
| 1. Annual; inflorescence spicate | 1. <i>Z. tenuior</i> L. |
| + Perennial; inflorescence capitate. | 2. <i>Z. clinopodioides</i> Lam. |

1. *Z. tenuior* L., Sp. Plant. 21 (1753).

Syn.: *Faldermannia tenuior* (L.) Ter.-Chatschat. in Not. Syst. Geogr. Inst. Tbilisi 17: 75 (1953).

TYPE. "Hab. in Syria?" (LINN—photo! ex herb. Cliff.?).

AFGHANISTAN. Herat: between Herat and Persian frontier, 900 m, *Furse* 5368; Kishlik, 7000 m, *Koeie* 4054. Kandahar: Farah to Shin Dand, *Koeie* 3571. Kabul: Kabul, Sher Darwasa, 2200 m, *Podlech* 10836; Kabul to Lataband, *Lamond* 1938; Sarobi, *Volk* 1889; Tang-i-Gharu, 1750 m, *Hedge & Wendelbo* W. 2773; Band-i Kharghak, 2050 m, *Rechinger* 31257. Ghazni: inter Qarabagh et Sang-i Masha, 2600 m, *Rechinger* 17389. Qataghan: Andarab valley, 2250 m, *Podlech* 11040; between Pol-i Khomri and Aybak, 900 m, *Hedge & Wendelbo* W. 3516. Badakshan: Faizabad, 1050 m, *Furse* 6229. Mazar-i-Sharif: Takht-e Rustam prope Aybak, 1200 m, *Rechinger* 16391. Bamian: Doab, 1440 m, *Hedge & Wendelbo* W. 3368.

W PAKISTAN. Quetta: foothills of Mashelagh range, 1700 m, *Lamond* 1083; Fort Sandeman to Wana, 1500 m, *Lamond* 1456; Spin Karez, *Rechinger* 29215; Quetta, *Koeie* 3382. Kalat: inter Kolpur et Mach, 900 m, *Rechinger* 28467. Kurram: Parachinar, 1500–1700 m, *Rechinger* 30909; inter Amal Kot et Sadda, 1400 m, *Rechinger* 30982. Chitral: Chitral–Mastuj track, 1520 m, *Stainton* 2413.

RANGE: Afghanistan, W Pakistan, SW and C Asia, Crimea, Balkans.

A fairly constant species, *T. tenuior* is one of the commonest annual labiates in this area.

2. *Z. clinopodioides* Lam., Illustr. 1: 63 (1791).

Described from C Asia (holo—P. n.v.).

The remarkable polymorphism of this species has already been discussed (*Hedge* in *Notes R.B.G. Edinb.* 23: 209–223, 1961). Consideration of the species throughout its entire range showed that despite the striking variation, only one species could be recognised. In that paper, recognition of infra-specific taxa was based on an informal classification.

Recent examination of a large quantity of Afghanistan material has shown that two main variants occur here. In habit, they are similar both having ascending or erect stems but in the extreme forms one has a villose calyx and the other has few scattered hairs on the calyx. The former corresponds with *Z. pseudodasyantha* Rech. f. (*Phyton* 3: 167, 1951—described from NE Iran, *Rechinger* 1425—holo W); the latter with *Z. afghanica* Rech. f. (*Phyton* 3: 169, 1951—described from Afghanistan, Mamakhel, *Koelz* 11527—holo W). Although the variation among the Afghanistan plants is considerably less than that of the Turkish plants and it might appear that at least varietal rank would be a satisfactory answer to the problem in our area, because of the great number of intermediates and the impression one forms of polytopic differentiation, I prefer to maintain the informal classification proposed in the cited paper.

The distribution of *Z. clinopodioides* is given in *Studies in the Flora of Afghanistan*: viii, fig. 1.

“*glabrata*” group. Stems procumbent or ascending, rarely more or less erect.

Calyx indumentum of short hairs or long scattered hairs. Including *Z. afghanica* Rech. f.

AFGHANISTAN. Kabul: Paghman, 2600 m, *Hedge & Wendelbo* W. 4361; Band-e Kharghak, 1900 m, *Lamond* 2025a. Gardez: Safed Kuh, 23 km N Gardez, c. 3000 m, *Rechinger* 31836. Kabul: Hauz-i Mahiha, 2500 m, *Koeie* 2342, 2344.

Paktia: in jugo Peiwar Kotal, c 2700 m, *Rechinger* 32230; Khost, W of Satekandau Pass, *Lamond* 2432. Parvan: Salang Pass, S side, 2250 m, *Lamond* 2075; Salang Pass, N side, *Furse* 6612. Qataghan: Namakab valley, 1600 m, *Podlech* 11471; Andarab valley, Darrah-i Kasan, *Podlech* 11697; Khinjan valley, *Podlech* 11565. Badakshan: Faizabad, 1900 m, *Edelberg* 1362. Nangarhar: Pashki, *Edelberg* 1310; Urura Pass, 3000 m, *Neubauer* 625.

W PAKISTAN. Quetta: Ziarat, *Lace* 71; Quetta, *Popov* 315. Kurram: Parachinar, *Rechinger* 30949, *R. R. Stewart* 28063. Chitral: NE of Drosh, *Stainton* 3109.

RANGE: throughout the range of the species.

Many specimens are intermediate in the density of calyx indumentum between this group and the following one. Others are intermediate between "*glabrata*" group and the "*rigida*" group which is characterized by erect, \pm tall stems and narrow oblong and lanceolate leaves; the following are examples—Afghanistan: Bamian: NW Panjao, 2900 m, *Rechinger* 18752. Ghorat: Parjuman, 1850 m, *Rechinger* 19057. Ghazni: inter Qarabagh et Sang-i Masha, 2800 m, *Rechinger* 17414. Mazar-i Sharif: Cheshma e Shafa, 500–800 m, *Rechinger* 16170.

"*tomentosa*" group. Stems erect or ascending. Calyx indumentum of long white hairs, dense. Including *Z. pseudodasyantha* Rech. f. and *Z. pamiroalaica* Juz. in Komarov, Fl. URSS 21: 668 (1954).

AFGHANISTAN. Kabul: Farza, 1850 m, *Hedge & Wendelbo* W. 3267; Guldarrah, 2000 m, *Podlech* 11625; Paghman, 2800 m, *Podlech* 11616, *Volk* 969a. Ghazni: distr. Malestan, N of Sang-i Masha, 3300 m, *Rechinger* 17595; in jugo Ghoutch Kol, 3300 m, *Rechinger* 17652. Ghorat: 12 km SW Taiwara, 2300 m, *Rechinger* 18988. Maymana: Darrah Belcheragh, 1200 m, *Hedge & Wendelbo* W. 3767. Parvan: Panjshir valley, Chimar, 2800 m, *Hedge & Wendelbo* W. 5384. Bamian: Band-i Amir, 2900 m, *Hedge & Wendelbo* W. 4759; inter Bulola et jugum Shibar, *Rechinger* 16768. Qataghan: Khost-o Fereng, 2200 m, *Podlech* 11934. Badakshan: Anjuman Pass, 4050 m, *Podlech* 12345; Siau valley, 4150 m, *Podlech* 12660; Quazi Deh valley, W Wakhan, 3400 m, *Roemer* 160.

W PAKISTAN. Chitral: Barum Gol, *Wendelbo*; Tirich Gol, 3350 m, *Bowes Lyon* 1067; Rosh Gol, 3050 m, *Stainton* 2825; Vedinkot, W of Baroghil Pass, 3050 m, *Stainton* 2965.

RANGE: Afghanistan, Soviet C Asia east to Altai mts, NE Iran.

In this group, as in the previous, specimens with male sterile flowers are not infrequent.

APPENDIX I

ADDITIONS TO THE PREVIOUSLY PUBLISHED PARTS

CALAMINTHA Mill., Gard. Dict. Abr. ed. 4 (1754).

C. rotundifolia (Pers.) Benth. in DC., Prodr. 12: 232 (1848).

Syn.: *Acinos rotundifolia* Pers., Syn. 2: 131 (1807).

Type. "Hab. in Hispania" (Type in Herb. Richard—P—n.v.).

AFGHANISTAN. Herat, Koeie 4061. Qataghan: Koh-i-Ishkamish, 1300 m, Podlech 10599.

RANGE: Afghanistan, SW Asia, S Europe, N Africa.

The two cited Afghan records are apparently the most eastern gatherings of the species.

ELSHOLTZIA Willd. in *Botanisches Magazin* (ed. Roem. & Usteri) 4, 11: 3 (1790).

E. ciliata (Thunb.) Hylander in *Bot. Not.* 129 (1941).

Syn.: *Sideritis ciliata* Thunb., *Fl. Japon.* 245 (1784).

Elsholtzia cristata Willd. in *Botanisches Magazin* (ed. Roem. & Usteri) 4, 11: 5 (1790).

E. patrinii (Lepech.) Garcke, *Fl. Deutsch.* ed. 4: 257 (1858).

Described from Japan.

AFGHANISTAN. Qataghan: Farkhar Valley, c. 5 km above Khanaqah-i-Warsaj, 2000 m, damp shady places, Podlech 12637.

RANGE: throughout the warmer parts of Asia and naturalised elsewhere.

This species has not previously been recorded from Afghanistan. Together with a few other specimens from Nepal, Tibet and the Karakoram, the Podlech gathering differs from most of the material of *E. ciliata* in the all over indumentum on the bracts and the long spinulose calyx teeth. Study of the variation of *E. ciliata* throughout its range is necessary before a conclusion can be reached about these apparently aberrant forms.

EREMOSTACHYS Bge. in *Ledeb., Fl. Alt.* 2: 414 (1830).

E. podlechii Hedge sp. nov. (Plate 7).

Ser. *Vulnerantes* Rech. f. & Koeie. *Radix* ignota. *Caulis* c. 80 cm altus, simplex, quadrangularis, erectus, internodiis paucis valde elongatis, pilis eglandulosis arachnoideo-lanatus. *Folia* radicalia petiolis c. 13 cm longis; lamina 17 × 9–10 cm, ovato-lanceolata, basi leviter cordata, apice acuta, margine sublobato-crenata, supra pilis albis longissimis eglandulosis laxe arachnoideo-floccosa, subtus pilis eglandulosis et pilis paucis glandulosis, nervatura supra tenuiter immersa, subtus prominenter reticulato-anastomosante. *Folia* caulina 2-paria, similia sed multo minora. *Verticillastra* 7, valde remota, sessilia, multiflora, compacta. *Bracteeae* numerosae, lineari-subulatae in mucronem pungentem excurrentes, calyci adpressae. *Calycis* tubus ± 14 mm longus, coriaceus, tubulosus, pilis eglandulosis numerosis et pilis brevioribus glandulosis dense praeditus, dentibus inaequalibus, brevioribus tribus in mucronem 4 mm longum, longioribus duobus in mucronem 7 mm longum attenuatis, omnibus breviter alatis. *Corolla* c. 25 mm, colore ignota, tubo breviter e calyce exserto, intra exannulata sed basi filamentorum lamellis quattuor strigoso-barbatis praedita; labium superius strigoso-barbatum; labium inferius paulo longius, trilobatum, lobo mediano 15 × 9 mm lateralibus distincte latiore. *Stamina* glabra. *Stylus* inclusus c. 16 mm, tomentosus. *Nuculae* ignotae. *Floret* Mai.

AFGHANISTAN. Qataghan (Baglan): Khinjan-Tal, 2200 m; Hänge an der Salang-Strasse, 27 v 1965, *Podlech* 10904. (holo—M).

RANGE: Afghanistan.

The new species has been placed in series *Vulnerantes* on account of the unequal mucronate calyx teeth, the stiff spiny bracts and the entire cordate leaves. It clearly differs from the only other species in that series, *E. vulnerans*, in the sparse indumentum on the leaves, the less dissimilar calyx teeth, the smaller corollas and the tomentose style. Although the flower colour is not clear from the dried specimen, it is clearly not the characteristic purplish-violet of *E. vulnerans*. Therefore, although *E. podlechii* fits the original description of series *Vulnerantes*, it cannot be considered as a close relative of *E. vulnerans*. There are two other features of this species that further stress its isolated taxonomic position: firstly, the absence of filamental appendages, usually present in *Eremostachys*, and the presence of four distinct plates of tissue at the base of the stamens; secondly, the unusually large middle lobe of the labellum which in width is almost as broad as the two lateral lobes together.

The finding of this distinct new species, and the recently described *E. badakshanic* Hedge, suggest that further exploration in N Afghanistan will yield other distinct novelties which will necessitate a revision of the currently accepted sub-generic divisions of *Eremostachys*.

The new species is named after Dr. Dieter Podlech of the Munich Botanic Garden, whose Afghan expedition in 1965 brought many interesting new plants to light.

GONTSCHAROVIA Boriss. in Not. Syst. Leningrad 15: 321 (1953).

1. *G. popovii* (B. Fedtsch. & Gontsch.) Boriss., l.c. 322. Ic.: l.c. 323 fig. 1.

Syn.: *Satureia popovii* B. Fedtsch. & Gontsch. in Acta Hort. Petrop. 41, 1: 117 (1929).

Several syntypes from W Tadzhikistan, *Regel* (LE—n.v.).

W PAKISTAN. Chitral: Shogor, 1900 m, *Schmid* 2419.

RANGE: Chitral, Kashmir, Pamir-Alai.

Borissova related *Gontscharovia* to *Mentha* in the original description of the genus but it appears to occupy a more natural position near *Satureia*.

The only other non-Soviet gathering that has been examined (Kashmir, Poonch, Ganga Choti, *Rashid Khan*—RAW) agrees well with the Chitral plant. Both appear to differ from the Soviet species in the narrower (linear-oblong in contrast to broad lanceolate) leaves and the longer anthers. They may represent a different taxon but until a range of Pamir-Alai material has been studied, they are best called *G. popovii*.

SALVIA L., Sp. Plant. 23 (1753); Gen. Plant. ed. 5: 15 (1754).

Since the account of this genus was published (Notes R.B.G. Edinb. 26: 407–425, 1966), two species not previously known in Afghanistan have been found. Another, *S. virgata*, previously only known from one gathering near Kabul has been collected in the north of the country.

STAATS-
HERBARIUM
MÜNCHEN

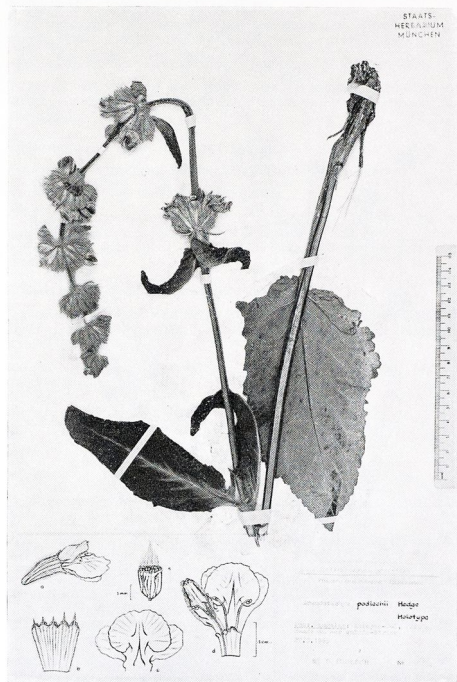


PLATE 7. Type specimen of *Eremostachys podlechii* Hedge. Inset: a. flower; b. calyx; c. lower lip of corolla; d. corolla opened out; e. young nutlet.

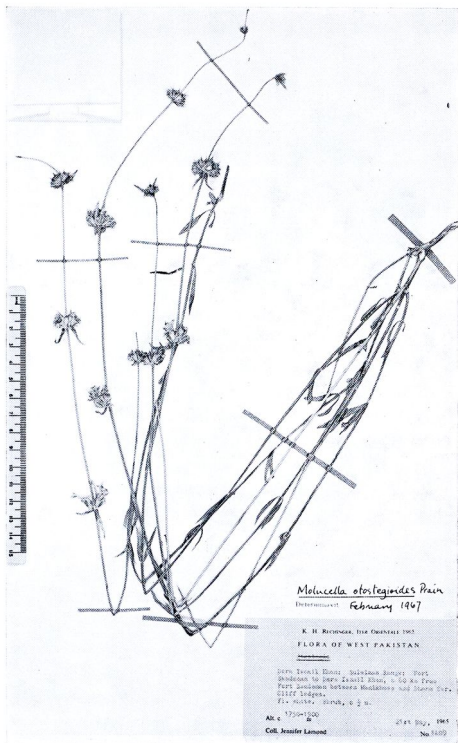


PLATE 8, Specimen of *Molucella otostegioides* Prain.

S. virgata Jacq., Hort. Vindob. 1: 14 (1770).

AFGHANISTAN. Parvan: Andarab valley, Darrah-i-Kasan, NE of Deh-Salah, 1800 m, *Podlech* 11664. Qataghan: Khost-o-Fereng, 2200 m, *Podlech* 11932.

RANGE: Afghanistan, C and SW Asia, S Europe.

The two new gatherings show that *S. virgata* is not an introduced weed in Afghanistan as was suggested before on the basis of the single gathering from near Kabul.

S. nemorosa L., Sp. Plant. ed. 2, 35 (1762) *s.l.*

AFGHANISTAN. Badakshan: Hazar-y Sayet (Kochka), 1900 m, *Frey* 102.

RANGE: Afghanistan, C and SW Asia, Europe.

Although in Pobedimova's account in Fl. URSS (21: 344-349, 1954), this species was split into *S. nemorosa* L., *S. tesquicola* Klok. & Pobed., *S. deserta* Schang. and *S. fugax* Pobed., I prefer in the meantime to use the more general epithet.

S. plebeia R. Br., Prodr. Fl. Nov. Holl. 501 (1810).

AFGHANISTAN. Nuristan: *Edelberg* 1506, 1578 (without locality); Khudikhel, *Koelz* 11531; Tschaghan Serai, Kunarthal, 820 m, *Gilli* 3633. Nangarhar: Kandai, *Rechinger* 32451.

RANGE: NE Afghanistan, Pakistan, India, Himalayan region, Malaysia, China, Australia.

APPENDIX II

SPECIES OF DOUBTFUL GENERIC AFFINITY

Molucella otostegioides Prain in Journ. As. Soc. Beng. 59, 2: 311 (1890). (Plate 8).

TYPE. W Pakistan: "NW Frontier; Suleiman Range in the Zam defile leading to Waziristan, 3500 ft." *J. L. Stewart* (K).

W PAKISTAN. Dera Ismail Khan: Sulaiman Range; Fort Sandeman to Dera Ismail Khan, c. 60 km from Fort Sandeman, cliff ledges, fl. white, shrub of c. 50 cm, 1750-1900 m, 21 v 1965, *Lamond* 1489, *Rechinger* 29944; 80 km E of Fort Sandeman, *Rechinger* 29956. Waziristan: Wana, 1370 m, 8 v 1895, *Duthie* 15788.

RANGE: W Pakistan (Sulaiman Range).

This interesting species is anomalous in *Molucella* on account of the shrubby perennial habit and unexpanded calyx limb (see fig. 6). The other two species of the genus, *M. laevis* L. and *M. spinosa* L. are annual plants from the E Mediterranean region, both with clearly expanded calyces.

It is also anomalous in any other Labiate genus, although superficially

resembling *Otostegia aucheri* Boiss., and there are good reasons for regarding it as a separate genus. However, a final decision on its correct position should only be made when specimens with mature nutlets are available.

The species is not keyed out in the generic key (Studies in the Flora of Afghanistan viii: 169-172).

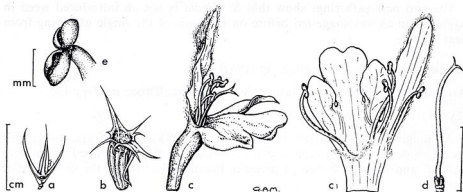


FIG. 6. *Molucella otostegioides* Prain. a, bract, b, calyx, c, corolla, c 1, corolla opened out, d, style, e anther.

APPENDIX III

CHECK LIST OF THE LABIATAE OF THE AFGHANISTAN AREA

- | | |
|---|--|
| <i>Ajuga parviflora</i> Benth. | <i>Elsholzia densa</i> Benth. |
| „ <i>bracteosa</i> Benth. | „ <i>ciliata</i> (Thunb.) Hyland. |
| „ <i>chamaecistus</i> Benth. | |
| <i>Calamintha debilis</i> (Bge.) Benth. | <i>Eremostachys vulnerans</i> Rech. f. & Koeie |
| „ <i>umbrosa</i> (M. Bieb.) Fisch. & Mey. | „ <i>podlechii</i> Hedge |
| „ <i>vulgaris</i> (L.) Druce | „ <i>hissarica</i> Rgl. |
| „ <i>rotundifolia</i> (Pers.) Benth. | „ <i>ghorana</i> Rech. |
| | „ <i>persimilis</i> Aitch. & Hemsl. |
| <i>Chamaesphacos ilicifolius</i> Schrenk | „ <i>thyrsiflora</i> Benth. |
| | „ <i>lindbergii</i> Rech. f. |
| <i>Dracocephalum paulsenii</i> Briq. | „ <i>laciniata</i> (L.) Bge. s.l. |
| „ <i>wendelboi</i> Hedge | „ <i>loasifolia</i> Benth. |
| „ <i>nutans</i> L. | „ <i>gymnoclada</i> Rech. f. & Koeie |
| „ <i>aitchisonii</i> Rech. f. | „ <i>superba</i> Benth. |
| „ <i>moldavica</i> L. | „ <i>acaulis</i> Rech. f. |
| „ <i>bipinnatum</i> Rupr. | „ <i>sanglechensis</i> Rech. f. |
| „ <i>heterophyllum</i> Benth. | „ <i>edelbergii</i> Rech. f. |
| „ <i>stamineum</i> Kar. & Kir. | „ <i>bamianica</i> Rech. f. |
| „ <i>kafiristanicum</i> Bornm. | „ <i>calophyta</i> Hedge |
| | „ <i>ariana</i> Hedge |

Eremostachys—contd.

- „ *rastagalensis* Hedge
 „ *labiosa* Bge.
 „ *vicaryi* Hook. f.
 „ *regeliana* Aitch. & Hemsl.
 „ *badakshanica* Hedge

Gontscharovia popovii (B. Fedtsch. & Gontsch.) Boriss.

Hymenocrater sessilifolius Benth.

Hypogomphia turkestanica Bge.

Hyssopus officinalis L. s.l.

Lagochilus cuneatus Benth.

„ *cabulicus* Benth.

Lallemantia baldshuanica Gontsch.

„ *royleana* (Benth.) Benth.

Lamium album L.

„ *amplexicaule* L.

„ *rhomboideum* Benth.

Leonurus cardiaca L.

Leucas mollissima [Wall. ex] Benth.

Lophanthus lipskyanus Ik.—Gal. & Nevski

Lycopus europaeus L.

Marrubium vulgare L.

„ *alternidens* Rech. f.

„ *procerum* Bge.

Mentha longifolia (L.) Huds.

„ *arvensis* L.*

„ *spicata* L. emend. Huds.*

Micromeria biflora (Ham.) Benth.

„ *subulifolia* Rech. f.

Molucella otostegioides Prain†

Nepeta longibracteata Benth.

„ *glutinosa* Benth.

„ *podostachys* Benth.

„ *oblanceolata* Rech. f.

„ *elliptica* [Royle ex] Benth.

„ *pubescens* Benth.

Nepeta—contd.

- „ *discolor* [Royle ex] Benth.
 „ *laevigata* (D. Don.) Hand.—Mazz.
 „ *govaniiana* (Benth.) Benth.
 „ *erecta* (Benth.) Benth.
 „ *clarkei* Hook. f.
 „ *floccosa* Benth.
 „ *olgae* Rgl.
 „ *glechomifolia* (Dunn) Hedge
 „ *leucocyanea* Rech. f. & Koeie
 „ *pamirensis* Franch.
 „ *cataria* L.
 „ *hindostana* (Roth) Haines
 „ *brachyantha* Rech. f. & Edelb.
 „ *rugosa* Benth.
 „ *suavis* Stapf
 „ *griffithii* Hedge
 „ *pinetorum* Aitch. & Hemsl.
 „ *bellevii* Prain
 „ *juncea* Benth.
 „ *xylorhiza* Rech. f.
 „ *prainii* Duthie
 „ *heterotricha* Rech. f.
 „ *persica* Boiss.
 „ *micrantha* Bge.
 „ *sewerzowii* Rgl.
 „ *rechingeri* Hedge
 „ *pungens* (Bge.) Benth.
 „ *satureioides* Boiss.
 „ *daenensis* Boiss.
 „ *bracteata* Benth.
 „ *raphanorhiza* Benth.
 „ *spathulifera* Benth.
 „ *eriosphaera* Rech. f. & Koeie
 „ *korshinskyi* Lipsky
 „ *graciliflora* Benth.?

Ocimum basilicum L.*

Origanum vulgare L. var. *vulgare*

„ „ „ „ *glaucum*
 (Rech. f.) Hedge & Lamond

„ *majorana* L.*

Otostegia aucheri Boiss.

„ *limbata* (Benth.) Boiss.

Perovskia abrotanoides Kar.

„ *atriplicifolia* Benth.

* Cultivated.

† See page 157.

Phlomis bucharica Rgl.

- „ *trineura* Rech. f.
 „ *cashmeriana* [Royle ex] Benth.
 „ *stewartii* Hook. f.
 „ *cancellata* Bge.
 „ *setigera* [Falc. ex] Benth.
 „ *bracteosa* [Royle ex] Benth.
 „ *spectabilis* [Falc. ex] Benth.
 „ *canescens* Rgl.

Plectranthus rugosus Wall.*Prunella vulgaris* L.*Salvia tetradonta* Hedge

- „ *pterocalyx* Hedge
 „ “*sp. nov.*”
 „ *cobulica* Benth.
 „ *bucharica* M. Pop.
 „ *maymanica* Hedge
 „ *compressa* Vahl
 „ *leriifolia* Benth.
 „ *macrostemon* Boiss.
 „ *spinosa* L.
 „ *moorcroftiana* Benth.
 „ *ariana* Hedge var. *ariana*
 „ “ “ “ var. *calophyta* Hedge
 „ *ceratophylla* L.
 „ *sclarea* L.
 „ *rhytidea* Benth.
 „ *nubicola* Sweet
 „ *virgata* Jacq.
 „ *nemorosa* L. s.l.
 „ *aegyptiaca* L.
 „ *santolinifolia* Boiss.
 „ *trichocalycina* Benth.
 „ *macilenta* Boiss.
 „ *plebeia* R. Br.

Satureia hortensis L.**Scutellaria multicaulis* Boiss.

- „ *glutinosa* Benth.
 „ *edelbergii* Rech. f.
 „ *litvinowii* Bornm.
 „ *teucriifolia* Dunn
 „ *linearis* Benth.

Scutellaria—contd.

- „ *petiolata* Hemsl. & Lace
 „ *nuristanica* Rech. f.
 „ *neubaueri* Rech. f.
 „ *heydei* Hook. f.
 „ *macrochlamys* Rech. f. & Fitz
 „ *ariana* Hedge
 „ *ghorana* Hedge
 „ *stocksii* Boiss.
 „ *leptosiphon* Nevski

Sideritis montana L.*Stachyopsis maleolens* (Rech. f.)

- Hedge
 „ *oblongata* (Schrenk) M. Pop. & Vved.

Stachys parviflora Benth.

- „ *floccosa* Benth.
 „ *sericea* Wall.
 „ *setifera* C. A. Mey.
 „ *trinervis* Aitch. & Hemsl.
 „ *arvensis* L.

Teucrium royleanum [Wall. ex] Benth.

- „ *scordium* L. var. *glabrescens* (Murata) Hedge & Lamond
 „ *scordium* L. var. *scordium*
 „ “ “ var. *serratum* (Benth.) Hedge & Lamond
 „ *polium* L.
 „ *stocksianum* Boiss. var. *patulum* Hedge & Lamond
 „ *stocksianum* var. *stocksianum*
 „ *stocksianum* var. *incanum* (Aitch. & Hemsl.) Hedge & Lamond

Thuspeinanta persica (Boiss.) Briq.

- „ *brahuica* (Boiss.) Briq.

Thymus koeieanus Ronn.

- „ “*sp. nov.*”
 „ *afghanicus* Ronn.

* Cultivated.

<i>Zataria multiflora</i> Boiss.	<i>Ziziphora</i> —contd.
	„ <i>clinopodioides</i> 'glabrata'
	group
<i>Ziziphora tenuior</i> L.	„ <i>clinopodioides</i> 'tomentosa'
„ <i>clinopodioides</i> Lam.	group

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